

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 11-2AC-130W,
VOLUME 3**



1 MAY 2015

Flying Operations

AC-130W OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ AFSOC/A3V

Certified by: AF/A3O
(Brig Gen Giovanni K. Tuck)

Pages: 182

This instruction implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, Air Force Instruction (AFI) AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, and AFI 11-202, Vol 3, *General Flight Rules*. It provides policies and procedures for the operation of all AC-130W aircraft under most circumstances but should not replace sound judgment. This instruction does not apply to Air Force Reserve Command (AFRC) and Air National Guard (ANG) units. This publication requires the collection and or maintenance of information protected by the Privacy Act (PA) of 1947. The authorities to collect and maintain the records prescribed in this publication are Title 10 United States Code, Chapter 857 and Executive Order 9397, Numbering System for Federal Accounts Relating to Individual Persons, 30 November 1943, as amended by Executive Order 13478, Amendments to Executive Order 9397 Relating to Federal Agency Use of Social Security Numbers, November 18, 2008. Forms affected by the PA have an appropriate PA statement. System of records notice F011 AF/XO-A, *Aviation Resource Management System* (ARMS) applies. Refer to Attachment 1 for a Glossary of references, abbreviations and terms. Send comments and suggested improvements electronically on Air Force (AF) Form 847, *Recommendation for Change of Publication*, through channels, to Headquarters (HQ) Air Force Special Operations Command (AFSOC) / Standardization/Evaluation (A3V), 100 Bartley Street, Suite 141W, Hurlburt Field, FL 32544-1015. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

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Chapter 1

GENERAL INFORMATION

1.1. General. This AFI provides guidelines and restrictions for AC-130W operations and applies to AC-130W aircrews at all management levels concerned with operation of the AC130W. It is a compilation of information from aircraft flight manuals, Flight Information Publications (FLIP) and other Air Force directives, and is an original source document for many areas. This instruction supersedes all guidance in Air Force Tactics, Techniques, and Procedures (AFTTP). It is written for normal and contingency operations to reduce procedural changes at the onset of contingencies. Training procedures are included. When guidance in this AFI conflicts with another basic/source document, that document takes precedence. For matters where this AFI is the source document, waiver authority is in accordance with (IAW) **Paragraph 1.4.** For matters where this AFI repeats information in another document, follow waiver authority outlined in the basic/source document. HQ AFSOC/A3V has overall responsibility for the administration of this AFI. (T-2)

1.2. Applicability. This AFI is applicable to all crew members operating the AC130W.

1.3. Key Definitions:

1.3.1. “Will” and “Shall” indicate a mandatory requirement.

1.3.2. “Should” indicates a preferred, but not mandatory, method of accomplishment.

1.3.3. “May” indicates an acceptable or suggested means of accomplishment.

1.3.4. “**WARNING**” indicates operating procedures, techniques, etc., which may result in personal injury or loss of life if not carefully followed.

1.3.5. “**CAUTION**” indicates operating procedures, techniques, etc., which may result in damage to equipment if not carefully followed.

1.3.6. “**Note**” indicates operating procedures, techniques, etc., which are considered essential to emphasize.

1.3.7. See **Attachment 1**, Glossary of References and Supporting Information for additional terms.

1.4. Deviations and Waivers. Do not deviate from the policies and guidance in this AFI except when the situation demands immediate action to ensure safety. (T-2)

1.4.1. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. When it is necessary to protect the crew and aircraft from a situation not covered by this instruction and when immediate action is required, the Pilot in Command (PIC) has ultimate authority and responsibility for the course of action to be taken. Report deviations, without waiver, through channels to HQ AFSOC/A3 within 48 hours, followed by a written report. (T-2)

1.4.2. Unless otherwise indicated, HQ AFSOC/A3 is the waiver authority for operational procedure requirements contained in this volume. HQ AFSOC/A3 may delegate this authority to Commander Air Force Special Operations Forces (COMAFSOF) for operationally assigned Special Operations Forces (SOF) during contingency operations. If

the AFSOC/A3 chooses to delegate waiver authority, it will be done in writing and will specify which portions of this instruction may be waived by the COMAFSOF. When waiver authority is delegated, HQ AFSOC/A3V will receive a copy of all approved waivers. (T-2)

1.4.2.1. Tier requirements refer to waiver authority based on level of risk IAW AFI 33-360:

1.4.2.1.1. “Tier 0” (T-0) Requirement is external to the Air Force and consequence of non-compliance is determined by respective non-AF authority. Requests for waivers must be processed through command channels to publication OPR for consideration

1.4.2.1.2. “Tier 1” (T-1) Non-compliance puts Airmen, commanders, or the USAF strongly at risk of mission or program failure, death, injury, legal jeopardy or unacceptable, fraud, waste or abuse. Waiver authority is the MAJCOM/CC (Delegable no lower than the MAJCOM Director) with concurrence of the publication’s Approving Official.

1.4.2.1.3. “Tier 2” (T-2) Non-compliance may degrade mission or program effectiveness or efficiency and has potential to create moderate risk of mission or program failure, death, injury, legal jeopardy or unacceptable, fraud, waste or abuse. Waiver authority is the MAJCOM/CC (Delegable no lower than the MAJCOM Director).

1.4.2.1.4. “Tier 3” (T-3) Non-compliance may limit mission or program effectiveness or efficiency and has a relatively remote potential to create risk of mission or program failure, death, injury, legal jeopardy or unacceptable, fraud, waste or abuse. Waiver authority is the Wing/CC (Delegable no lower than Group/CC or equivalent).

1.4.3. Crews requiring waivers or technical assistance should contact the controlling agency for proper coordination. The PIC must consider all factors (Crew Duty Time/Flight Duty Period (FDP)), aircrew qualification levels, type mission and sortie duration, weather, Notices to Airmen, and alternates) before requesting the waiver. It is highly recommended that the PIC contact squadron Top 3 (Squadron Commander (CC), Director of Operations & Assistant Director of Operations) or Operations Group Standardization/Evaluation (OG/OGV) for any advice or assistance prior to waiver request (time permitting). Transmit mission data to the controlling command and control (C2) agency by any means available (i.e., Defense Switching Network (DSN), High Frequency (HF) radio, Iridium phone and L-Band Satellite Communication (SATCOM), etc.).

1.5. Distribution. Limited: Distribute this AFI only as directed in applicable Flight Crew Information Summary Required Publication Tables.

1.6. Supplements. Major Commands (MAJCOM) may supplement this volume according to AFD 11-2, *Aircrew Operations*. These supplements will not duplicate, alter, amend or be less restrictive than the provisions of this AFI. Forward MAJCOM supplements to HQ AFSOC/A3V and HQ AFFSA/XOF for approval before publication and provide HQ AFFSA/XOF one copy after publication. File supplements according to AFI 33-360, Vol 1, *Publications Management Program*. (T-1)

1.6.1. Local Procedures Coordination Process. Units will send one copy of **Chapter 10** (Local Procedures) supplements to HQ AFSOC/A3V for validation. (T-2)

1.7. Requisitioning Procedures. This AFI shall only be delivered electronically to the end user. Printing is at the discretion of the individual units.

1.8. Improvement Recommendations. Recommendations for improvement to this publication are encouraged. AF/A3O is approval authority for changes to this AFI. AFSOC/A3V will issue approved changes to this AFI through MAJCOM/A3 channels. Refer recommended changes and conflicts between this and other publications to HQ AFSOC/A3V, 100 Bartley Street, Suite 141W, Hurlburt Field, Florida, 32544 on AF Form 847. HQ AFSOC/A3V will forward changes to AF/A3O with an info copy to AF/A3OI, for final approval prior to implementation. (T-2)

1.9. Definitions. Find explanations or definitions of terms and abbreviations commonly used in the aviation community in Code of Federal Regulations Title 14, Part 1; Department of Defense (DoD) *FLIP General Planning*, Chapter 2; and Joint Pub 1-02, *The DoD Dictionary of Military and Associated Terms*. See **Attachment 1** for common terms used herein.

1.10. Aircrew Operational Reports. The information requirement contained in this Instruction is exempt from licensing in accordance with Chapter C4., paragraph C4.4., of DoD 8910.1-M, *Department of Defense Procedures for Management of Information Requirements* (reference (C4.4.2.)).

Chapter 2

COMMAND AND CONTROL

2.1. General. The AFSOC C2 system is based on the principles of centralized monitoring and decentralized control and execution. The result is a C2 mechanism which keeps the AFSOC Commander informed of the current status of AFSOC forces while enabling the Wing or Group Commander to exercise control over day-to-day operations.

2.2. Operational Control (OPCON). AFSOC is designated as the controlling agency for United States Special Operations Command (USSOCOM) assigned Air Force SOF aircraft, while Theater Special Operations Commands (TSOC) have OPCON of theater-based assets. In practice, the Special Operations Wing or Group Commander routinely exercises delegated responsibility for planning and executing home-station AFSOC missions, off-station training missions, and missions transiting to/from other Areas of Responsibility (AORs). The Wing or Group Commander, in turn, exercises control of home-station missions through the command post (CP) supporting the wing or group. In the event that assigned forces undergo a Change in Operational Control (CHOP), responsibility for mission monitoring passes from the wing or group C2 facility to the gaining command. Changeover will be accomplished IAW the pertinent Operational Plan, Operational Order, or deployment or execution order. (T-2)

2.2.1. Unless otherwise specified by OPLAN/CONPLAN, Wing or Group OPCON terminates when forces first land in the gaining TSOC/Joint Special Operations Air Component (JSOAC) AOR; Wings/Groups resume OPCON of redeploying forces when those forces first land outside the TSOC/JSOAC AOR. (T-2)

2.3. Waiver and Approval Authorities.

2.3.1. The AFSOC/A3 holds waiver/approval authority for items normally authorized above wing level, and for those items identified as COMAFSOF authorities. (T-2)

2.3.2. Waiver request will be the responsibility of the C2 agency with the operational control of the mission. Operational waivers will be coordinated through the Stan/Eval channels. (T-2)

2.4. Mission Monitoring. The AFSOC Operations Center monitors all off-station AFSOC aircraft via Theater Battle Management Core Systems (TBMCS) – Execution Status and Monitoring (ESTAT), the Global Decision Support System (GDSS), Theater Situation Reports, and aircrew Deployed Status Reports (DSR). Aircraft equipped with Blue Force Tracker (BFT) devices are tracked near real time via the Common Operating Picture (COP). Inputs to these various tracking tools are provided by the C2 agency with OPCON.

2.4.1. PIC or mission commander flight reporting duties:

2.4.1.1. Stations With Mobility Air Force (MAF) C2 Agency. Aircrews will provide a “Thirty Minute” Out Call. Transmit an Ultra High Frequency (UHF) or Very High Frequency (VHF) arrival advisory to the destination C2 agency approximately 30 minutes prior to arrival. Provide Estimated Time in Blocks (ETB). Local MAF C2 agents will enter mission data (arrival, departure, and advisory messages) in GDSS when applicable. Additionally, aircrews must keep their controlling C2 agency apprised of all

actual takeoff and landing times, projected takeoff times, and other related information within 30 minutes after landing. (T-2)

2.4.1.2. Stations Without MAF C2 Agency. Transmit mission data (arrival, departure, and advisory messages) to the controlling C2 agency, within 30 minutes after landing, by any means available. (Preference in the following order: DSN/commercial telephone, HF phone patch, Iridium Phone). For critical C2 communications, i.e. aircraft waiver request, maintenance delay, etc., voice communications are the primary method. (T-2)

2.4.1.3. Provide controlling C2 agency with daily DSR.

2.4.1.4. Reporting Agencies. See **Table 2.1**.

Table 2.1. Reporting Agencies.

AFSOC Operations Center		
Telephone	DSN	312-579-3290
	Commercial	850-884-3290
	Toll-Free	800-451-7705
	RSDN	579-0212
FAX	DSN	312-579-5171
	Commercial	850-884-5171
E-mail	hq.afsoc.sdo@hurlburt.af.mil	
Secure E-mail	afsoc.ocops.nco@afsoc.af.smil.mil	
AFSOC Command Center		
Telephone	DSN	312-579-8900
	Commercial	850-884-8900
	Toll-Free	800-451-7705
E-mail	afsoc.cmd.ctr@hurlburt.af.mil	
Secure E-mail	afsoc.cmd.ctr@afsoc.af.smil.mil	
27 SOW		
Telephone	DSN	312-681-2253
	Commercial	505-784-2253
	Toll-Free	800-346-6679
	RSDN	299-5653
FAX	DSN	312-681-6406
	Commercial	505-784-6406

E-mail	27sowcp@cannon.af.mil	
Secure E-mail	27sow.cp.dl@afsoc.af.smil.mil	
1 SOW		
Telephone	DSN	312-579-8100
	Commercial	850-884-8100
	Toll-Free	800-346-6679
	RSDN	579-3601
FAX	DSN	312-579-6778
	Commercial	850-884-6778
E-mail	1sow.cp.dl@hurlburt.af.mil	
Secure E-mail	1sow.commandpost@afsoc.af.smil.mil	
RAF Mildenhall (100 ARW) CP		
Telephone	DSN	314-238-2121
	Commercial	011 (00)44-207-499/894
Kadena AB (18 WG) CP		
Telephone	DSN	315-634-8516/8405
	Commercial	011-(00)81-6117

2.5. Search and Rescue Satellite-Aided Tracking (SARSAT). SARSAT is an international satellite system for Search and Rescue (SAR). It consists of a constellation of seven satellites in low earth orbit, 5 geostationary satellites and a network of earth stations, which provide distress alert and location information to appropriate rescue authorities anywhere in the world for users in distress. The SARSAT detect beacons broadcasting on 406.025 Megahertz (MHz). The current SARSAT system consists of 64 Local User Terminals (LUT) and 26 Mission Control Centers in 32 countries, including 12 in the United States. SARSAT coverage on 406 MHz is worldwide. The Rescue Coordination Center (RCC) at Langley AFB, VA, maintains one deployable LUT (camper sized, air transportable van) to provide contingency coverage.

2.6. Designation of a COMAFSOF. The Commander, USSOCOM, or TSOC may designate a COMAFSOF. This should be done in writing, and the designation letter will include the individual by name, and the geographic area of authority. In the absence of a USSOCOM or TSOC designated COMAFSOF, AFSOC/A3 may designate an individual with waiver authority equivalent to a designated COMAFSOF. This must be done in writing, and the designation letter should include the individual by name, and the geographic area of authority. The designation letter should be updated to reflect any personnel changes as a result of prolonged deployments.

2.7. Mission Commander. A mission commander will be designated when more than one aircraft or crew is deployed away from home station for training, exercises, or other operations. The mission commander will be rated, and should be a field grade officer. The mission or air

mission commander will not be a primary crew member for exercises, but may fly as a crew member on non-exercise related missions. Mission commanders are responsible for overall mission execution as well as aircraft and personnel supporting the mission. Mission commander duties include, but are not limited to: (T-2)

2.7.1. Briefing crews on local operating procedures.

2.7.2. Coordinating with Air Traffic Control (ATC), Combat Control Team (CCT), Special Tactics Squadron (STS), Range Control Officer (RCO), users, and others that may have an impact on the mission.

2.7.3. Ensuring personnel have ample and adequate billeting, sustenance, and transportation arrangements.

2.7.4. Ensuring maintenance personnel know of aircraft and fuel requirements.

2.7.5. Submitting timely reports on aircraft movements.

2.8. Pilot in Command Responsibility and Authority. AF Form 4327A, *Crew Flight Authorization (FA)*, designates a PIC for all flights. PICs are:

2.8.1. In command of all persons on board the aircraft.

2.8.2. Responsible for the welfare of their aircrew members, Mission Essential Personnel (MEP), and the safe accomplishment of the mission.

2.8.3. Vested with the authority necessary to manage their crew and safely accomplish the mission.

2.8.4. The final mission authority and will make decisions not specifically assigned to a higher authority.

2.8.5. The final authority for accepting a waiver affecting the crew or mission.

2.8.6. Charged with keeping the applicable commander informed of mission progress and difficulties.

2.8.7. Responsible for the timely reporting of aircraft movements in the absence of a mission commander.

2.8.7.1. Maintenance Delays Away from Home Station. PICs will coordinate with local maintenance for available support, and then report to AFSOC Combat Logistics Operations (CLO): DSN 579-8925, (850) 884-8925 or 1-800-451-7705. When reporting, describe the problem, the assistance available (if any) and assistance required. Any time the aircraft experiences over a 2-hour maintenance delay the PIC will report to AFSOC Logistics Readiness Center (LRC) as soon as practical (regardless of the support being received from the deployed location). (T-2)

2.9. Airborne Mission Commander (AMC). The individual responsible for the overall employment of all air assets assigned to the mission. Required for multi-element, multi-event formations, and/or where mission complexity dictates. The AMC will not be a primary crew member and should be on headset. (T-2)

2.10. Deputy Mission Commander (DMC). Required on all missions employing a dedicated AMC, on all multi-element formation missions, and on all single-element formations of three

aircraft or more. The DMC assumes command if conditions prevent the AMC from controlling the mission. The DMC may be a primary crew member, and is usually the Formation Commander on AMC controlled missions. The DMC should not be on the same aircraft as the AMC. (T-2)

2.11. Mission Clearance Decision. The final decision to delay a mission may be made either by the agency with OPCON or the PIC when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the PIC. If the PIC refuses a mission, it will not depart until the conditions have been corrected or improved so that the mission can operate safely. Another PIC and aircrew will not be alerted to take the same mission under the same conditions. (T-2)

2.11.1. Diverting or rerouting a mission must be authorized by the commander with OPCON, except in an emergency or when required by en route or terminal weather conditions or facilities. In the event of an emergency or weather related divert or reroute, the mission commander PIC must notify the controlling authority as soon as possible. (T-2)

2.11.1.1. The controlling agency directing the diversion or rerouting is responsible for ensuring destination requirements or facilities are adequate for the aircraft and aircrew.

2.11.1.2. The PIC will notify the controlling agency of any aircraft or aircrew limitations that may preclude diverting or rerouting the mission. (T-2)

2.11.2. When directing an aircraft to an alternate airfield, the controlling agency will ensure the PIC is provided existing and forecasted weather for the alternate. If the planned alternate is unsuitable upon arrival at destination, the controlling agency will advise the PIC of other suitable alternates. (T-2)

2.12. Civilian Law Enforcement Support. It is the policy of the Department of Defense to cooperate with civilian law enforcement officials to the maximum extent practicable. AFI 10801, *Defense Support of Civilian Authorities (DSCA)*, incorporates the appropriate directive and provides uniform policies and procedures service members must follow when supporting federal, state, and local civilian law enforcement agencies. It establishes specific limitations and restrictions on the use of Air Force personnel, equipment, facilities, and services by civilian law enforcement organizations. Report all requests for assistance and coordinate all requests from civilian law enforcement authorities through the appropriate C2 channels. (T-2)

Chapter 3

CREW COMPLEMENT AND MANAGEMENT

3.1. Aircrew Qualification. Each person assigned as a primary crew member must be qualified or in training for qualification in that crew position, mission, and Mission Design Series (MDS) aircraft. (T-2)

3.1.1. Basic Aircraft Qualified (BAQ) crew members may perform primary crew duties on any non-mission sortie and on missions (including unilateral training, joint training and exercises) when receiving mission qualification training or evaluations under the supervision of a qualified instructor or flight examiner in their respective crew position.

3.1.2. Basic Mission Capable (BMC) crew members may perform primary crew duties on any unilateral training mission. For other missions, the unit commander must determine the readiness of each basic mission capable crew member to perform primary crew duties.

3.1.3. Noncurrent (NC) or Unqualified (UNQ) pilots may perform crew duties only on designated training or evaluation missions under the supervision of a qualified instructor or flight examiner pilot. Both pilots must be fully qualified unless exempted by AFI 11-401, *Aviation Management*. (T-2)

3.1.4. Other NC or UNQ crew members may perform duties in their primary crew position on any mission when under direct supervision of a qualified instructor or flight examiner in their respective crew position. In this case, the student crew member and the instructor or flight examiner fulfills the requirement for one primary position as specified in **Table 3.1**.

3.1.5. For the purpose of aircraft/mission familiarization, the Group Commander, or COMAFSOF may authorize unqualified personnel to perform duties in non-pilot crew positions during flight under direct instructor/flight examiner supervision. (T-3) The purpose of this familiarization training is to enhance crew esprit and to enable the individual to gain a better understanding of the crew concept. This training will only be conducted in permissive environments, and only when mission accomplishment is not impacted. Comply with AFI 11401. (T-2)

3.1.6. Unqualified personnel attending the SOF Weapons Instructor Course (WIC), may perform duties during non-critical phases of flight in all crew positions on WIC syllabus-approved training sorties when under the direct supervision of an MDS-qualified WIC instructor in that crew position.

3.2. Crew Complement. Minimum crew complement will be as specified in the flight manual and **Table 3.1**. The group commander or COMAFSOF is the waiver authority for all other crew positions above the minimum specified by the flight manual. (T-3)

Table 3.1. Crew Qualification Complement (T-3).

Crew Position	Basic	Augmented	Mission	Augmented Mission
Pilot (P)/Aircraft Commander (AC)	1	2	1 ¹	2 ²

Copilot (CP)	1	1	1	1
Navigator (NAV)	1 ³	2	1 ³	2
Combat Systems Officer(CSO)			1 ^{3,4}	2
Flight Engineer (FE)	1	2	1	2
Aerial Gunner (AG)	1	2 ⁵	2 ⁶	3 ⁶
Direct Support Operator (DSO)			1 ⁷	1 ⁷
Tactical Systems Operator (TSO)			1 ⁷	1 ⁷
Note 1: A standing instructor pilot may conduct live/dry-fire supervision for weapon(s) employment training provided both pilots flying are at least BAQ.				
Note 2: Both ACs must be qualified in all phases of the mission to be accomplished. Transfer of PIC duties between qualified ACs will be briefed to the crew.				
<p>Note 3: Comply with the following requirements:</p> <ul style="list-style-type: none"> - During training, all BAQ events, Night Vision Goggle (NVG) takeoffs and landings, tactical recoveries, and hot refueling may be conducted without a NAV or CSO on board the aircraft. - PICs may elect to have the NAV remain at the Mission Operator Pallet (MOP) for Air-to-Air Refueling (AAR) when mission dictates. - A CSO is not required to accomplish AAR. - A NAV or CSO that is NC or is undergoing training for weapons systems added after their initial qualification may be supervised by an instructor occupying the other MOP position. An UNQ NAV or CSO requires a standing instructor. If both the NAV and CSO are UNQ, two standing instructors are required. <p>EXCEPTION: If the instructor assesses that the training for a specific sortie can be accomplished with one instructor and two students (MOP instruction only), the squadron director of operations may waive the requirement for 2 standing instructors.</p>				
Note 4: Unit/mission commanders may authorize local mission training flights without a CSO on board when manning or systems limitations dictate. In this case, live fire operations are not authorized.				
Note 5: One AG is required on augmented basic crews if other crew members can periodically scan the cargo compartment.				
<p>Note 6: Comply with the following requirements during mission sorties:</p> <ul style="list-style-type: none"> - Only one AG is required during mission training sorties that will not conduct Common Launch Tube (CLT) installation/removal procedures or live fire any Gun Weapon Systems (GWS). One AG is authorized to configure GWS for motion, but will not place rounds in the GWS. - Hot refueling may be conducted with one AG performing panel operator duties. - Two AGs are required to conduct CLT installation/removal procedures. 				

- Two (three for augmented mission) AGs are required to perform live fire operations when only one GWS will be utilized.
- Three (four for augmented missions) AGs are required to perform live fire operations when utilizing multiple GWS.
- Instructors may act as a primary crew member while instructing a single NC AG. Instructors will not act as a primary crew member while actively instructing UNQ AGs. Instructors will not instruct more than two UNQ/NC AGs at one time.

Note 7: DSO/TSO – Added to crew when required by specific mission.

3.3. Mission Essential Personnel (MEP) and Additional Crew Members (ACM). See AFI 11-401.

3.4. Interfly. Interfly is the exchange and/or substitution of aircrew members and/or aircraft between MAJCOMs to accomplish flying missions. Normally, interfly should be limited to specific operations/tests, exercises, or special circumstances.

3.4.1. HQ AFSOC/A4RX maintains current Memorandum of Agreements (MOAs) between AFSOC, AFRC, Air Force Material Command (AFMC), Air Education Training Command (AETC), and Air Combat Command (ACC) for interfly using AFSOC-assigned aircraft. Unless specified in the MOA:

3.4.1.1. Aircraft ownership will not be transferred. (T-2)

3.4.1.2. The operational squadron will prepare and sign the flight authorizations. (T-2)

3.4.1.3. As a minimum, crews will be BAQ in the MDS-aircraft and model, as well as systems or configuration required to fly the aircraft and/or mission. If noncurrent, comply with **Paragraphs 3.1.3** and **3.1.4**. (T-2)

3.4.1.4. Crew member(s) will follow operational procedures defined in this Volume, AFTTP 31, *General Planning and Employment Considerations*, and 3-3.AC-130W (or equivalent), and the applicable technical orders for the MDS. (T-2)

3.4.1.5. AFSOC/AFRC/AETC will retain all flight and ground mishap reporting responsibility. Flight and ground mishap reporting responsibility will be handled IAW AFI 91-204, *Safety Investigations and Reports*. (T-2)

3.4.2. Waiver Authority.

3.4.2.1. With a valid MOA. Group Commander or COMAFSOF is the approval authority for interfly on AFSOC aircraft under their control. (T-3) In all cases, the crew will be qualified in the aircraft MDS. (T-2)

3.4.2.2. No MOA/Expired MOA. HQ AFSOC/A3 is the approval authority for interfly on AFSOC aircraft. (T-2)

3.4.2.3. Contingency operations must be approved by both HQ AFSOC/A3 and the respective MAJCOM/A3. (T-1)

3.4.3. Aircrew members assigned to the USAF Weapons School (USAFWS) are authorized to participate in orientation flights in AFSOC aircraft operated by crews from 14 Weapons School (WPS).

3.4.4. Aircrew members assigned to the USAFWS are authorized to occupy duty positions on AFSOC aircraft operated by 14 WPS. Crew member must be under instructor supervision if not current or qualified in the MDS. (T-2)

3.4.4.1. The above authorizations are extended to senior leadership in the USAFWS chain of command.

3.4.4.2. Flights conducted under the above provisions will be within the normal syllabi. (T-2)

3.5. Intrafly. Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions. Normally, intrafly should be used only to relieve qualified manpower shortfalls.

3.5.1. The Group Commander possessing the aircraft or COMAFSOF is approval authority for intrafly between units. (T-3)

3.5.2. As a minimum, crews will be qualified in the MDS-aircraft and model, as well as systems or configuration required to fly the aircraft and/or mission. (T-2)

3.5.3. Crew member(s) will follow operational procedures defined in this AFI, AFTTP 3-1 and 3-3. AC-130W (or equivalent), and the applicable technical orders for the MDS. (T-2)

3.6. Alert Crew Procedures. See AFI 11-202, Vol 3 and AFSOC Supplement.

3.7. Flight Duty Period and Crew Rest Restrictions. See AFI 11-202, Vol 3 and AFSOC Supplement. AC-130W aircrews will use the Tanker/Transport with Sleeping Provisions category for maximum FDP.

3.8. Scheduling Restrictions. Refer to AFI 11-202, Vol 3 Chapter 9, crew members will not be scheduled to fly nor will they perform crew duties: (T-2)

3.8.1. When taking oral or injected medication, unless an individual medical waiver has been granted by HQ AFSOC/SG. Mild analgesics such as aspirin and aspirin substitute may be used without prescription when the underlying illness is not cause for grounding. Dexedrine or similar stimulant pep pills will not be used unless authorized by HQ AFSOC/SG. (T-2)

3.9. Alert Procedures. Refer to AFI 11-202, Vol 3 AFSOC SUP 1 Chapter 9, for alert procedures.

Chapter 4

AIRCRAFT OPERATING GUIDELINES

4.1. Objectives. A fully mission capable aircraft is the ultimate objective of the logistics effort. The final responsibility regarding equipment required for a mission rests with the PIC. If one crew accepts an aircraft to operate a mission or mission segment without an item or system, this acceptance does not commit that crew, or a different crew, to accept subsequent operations with the same item or system inoperative. When the PIC considers an item essential, designate the component mission essential (ME) on the Air Force Technical Order (AFTO) Form 781A, *Maintenance Discrepancy and Work Document*, and the item will be repaired or replaced prior to departure. (T-2)

4.2. Policy. This chapter provides guidance on how to operate with degraded equipment. If the PIC elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (i.e., revised departure times, fuel requirements, maintenance requirements, etc.) prior to flight with the mission control agency to ensure the decision does not adversely impact follow-on missions. (T-2)

4.3. Aircraft Operating Guidelines:

4.3.1. Pressurization and Air-conditioning Systems: Pressurization and both air-conditioning systems should be operational. If a system fails at an en route stop, the mission may continue to a destination with repair capability. Required en route stops are authorized. (T-2)

4.3.2. Electrical System: All engine Alternating Current (AC) generators will be operational prior to departure. If a generator fails at an en route stop, the mission may continue to a destination with repair capability. Required en route stops are authorized. If the aircraft is equipped with a failed bearing indicating system, the generator may be turned off and monitored in lieu of disconnecting the generator. (T-2)

4.3.3. An operative Auxiliary Power Unit (APU) generator is required for unrestricted flight. If the system is inoperative, flight in daylight Visual Meteorological Conditions (VMC) within 100 nm of a suitable airfield is permissible provided no other electrical malfunction exists. An inoperative APU generator will be removed and padded prior to operating the APU. (T-2)

4.3.4. Fuel System: The primary concern with inoperative fuel boost pumps or quantity indicators is fuel balance and wing loading. Degraded operation is permissible; however, flight crews must consider potentially trapped fuel and decreased range should further degradation occur. The following paragraphs provide guidelines for degraded fuel system operations under most circumstances.

4.3.4.1. One pump must be operable for each external tank containing fuel. (T-2)

4.3.4.2. One main tank fuel indicator may be inoperative. Two main tank indicators may be inoperative provided they are not symmetrical tanks or on the same wing. (T-2)

4.3.4.2.1. The tank with the inoperative indicator and its symmetrical tank quantity will be verified by use of a fuel tank dip stick. (T-2)

4.3.4.2.2. At en route stops when engines are shut down, dip check the tank with the inoperative indicator and the symmetrically opposite tank. (T-2)

4.3.4.2.3. Begin cross-feed operation when the symmetrically opposite quantity indicator has decreased to 1,500 pounds (inboards) and 2,500 pounds (outboards). (T-2)

4.3.4.2.4. Engine out training using the engine corresponding to the inoperative indicator or it's symmetrically opposite will not be conducted during tank to engine operation. (T-2)

4.3.4.2.5. Maintain symmetrical engine fuel flow. (T-2)

4.3.4.2.6. Plan to terminate flights with a minimum of 8,000 pounds calculated main tank fuel. (T-2)

4.3.4.3. One external fuel tank indicator may be inoperative provided both external fuel tanks are checked full or empty. Both external fuel tank indicators may be inoperative provided both external tanks are checked empty. When an external tank indicator is inoperative and the tank cannot be visually checked empty due to foam modification, comply with the following prior to flight: (T-2)

4.3.4.3.1. Check pressure with each pump in the external tank. If no pressure is obtained, the tank is verified empty. (T-2)

4.3.4.3.2. If pressure is obtained, ground-transfer the fuel from the external tank. Defuel the external tank if unable to ground transfer. (T-2)

4.3.4.3.3. When unable to verify an external tank is empty prior to engine start, place the tank on cross-feed until no pressure is obtained. This will be completed prior to takeoff. (T-2)

4.3.4.4. Both auxiliary tank indicators may be inoperative provided auxiliary fuel quantity is verified by the tank sight gauge. (T-2)

4.3.4.5. Both a main and external fuel tank indicator may be inoperative on the same wing provided steps in **Paragraphs 4.3.4.2** and **4.3.4.3** are followed. (T-2)

4.3.4.6. For other than normal ground refueling/defueling operations and associated guidelines in this chapter, fuel will not be transferred into or out of a main or external fuel tank with an inoperative indicator or its symmetrical tank except the following: (T-2)

4.3.4.6.1. Fuel transfer into a main or external tank with an inoperative indicator may be accomplished during contingency or emergency fuel need situations. All transfers, under these conditions, will be coordinated verbally and visually with the P/CP as a backup for lateral wing balance. Compliance with **Paragraphs 4.3.4.2**, **4.3.4.3** and sub-paragraphs still apply. (T-2)

4.3.4.6.2. A reliable source of known quantity transferred must be available. This source can be either the internal aircraft operating fuel quantity indicators, the Tanker's Air Refueling System, or the fuel truck. (T-2)

4.3.4.6.3. Maintain symmetrical tanks within 1,000 pounds at all times. Initiate fuel transfer by opening only the refuel valve corresponding to the inoperative fuel

quantity indicator. Verify fuel is being transferred into the tank, and then open the remaining refuel valves. When the symmetrical tank reaches the desired fuel level, close both refuel valves while verifying a pressure increase on the fuel pressure transmitter. Close the other refuel valves as appropriate. (T-2) **Note:** To avoid an inadvertent pressure disconnect, coordinate with the tanker to use only one fuel transfer pump until all receiver refuel valves are open. **Note:** If the refuel valve corresponding to the inoperative fuel quantity indicator loses power during fuel transfer, the only indication will be an increase in the manifold fuel pressure. If this occurs, fuel transfer will be terminated until the failed refuel valve is identified and the other power source is selected. (T-2)

4.3.5. Anti-skid System: The anti-skid may be inoperative for flight to a destination with repair capability. Required en route stops are authorized. (T-2)

4.3.5.1. A local training flight may continue once airborne if the anti-skid fails provided the system is turned off. The mission is restricted to one termination landing. (T-2)

4.3.6. Landing Gear System: If a landing gear or position indicating system malfunction is encountered, only a full stop landing will be made. Gear will not be moved from the down and locked position. The discrepancy will be corrected prior to the next flight. (T-2) **Exception:** If repair capability does not exist and a positive determination is made that further flight can be accomplished with the gear down and locked, the aircraft may be flown to a destination where repair capability exists provided the gear is not moved from the down and locked position. Required en route stops are authorized. (T-2)

4.3.7. Doors and Ramp System: Aircraft will not depart on a pressurized flight unless the door warning light system for the cargo ramp is operative. (T-2)

4.3.7.1. Aircraft will not be flown with a crew entrance door or crew entrance door warning light malfunction. (T-2)

4.3.7.2. Aircraft will not be flown pressurized with a cargo ramp lock malfunction. Unpressurized flight is authorized with a cargo ramp lock malfunction only when mission requirements dictate. (T-2)

4.3.8. Navigations Systems: Comply with FLIP series publications for required navigational systems while operating in the Minimum Navigation Performance System (MNPS). (T-2)

4.3.8.1. For flights in MNPS airspace and below in the North Atlantic Region or the Composite Hawaii/Mainland Route System, the following minimum operable navigation systems are mandatory: (T-2) **Note:** ATC uses the same reporting and investigating criteria for gross navigational errors that occur below as well as within MNPS airspace.

4.3.8.1.1. Two independent sources of drift and ground speed (GS), i.e., doppler velocity system (DVS) and inertial navigation system (INS), DVS and global positioning system (GPS), or INS and GPS. (T-2)

4.3.8.1.2. Two independent sources of heading, i.e., one C-12 compass system and an INS or two C-12 compass systems. The C-130 standby compass is not considered a separate source for the purposes of this paragraph. (T-2) **Note:** For flights above 72 degrees North an operable INS and GPS are required. (T-2)

4.3.8.2. For flights on all other Category I routes, the following minimum operable navigation systems are mandatory: (T-2)

4.3.8.2.1. DVS, INS, or GPS. (T-2)

4.3.8.2.2. Two independent sources of heading, i.e., one C-12 compass system and an INS or two C-12 compass systems. The C-130 standby compass is not considered a separate source for the purposes of this paragraph. (T-2)

4.3.8.3. For all other flights on Category II routes, or tactical missions, the PIC will decide what the minimum navigation requirements are to safely execute the mission. (T-2)

4.3.9. Radar: Weather mode radar must be operative for flights into areas of known or forecast thunderstorms. (T-2)

4.3.10. The following systems (if equipped) should be operational as listed below for all departures unless parts are not available on station to repair the system. (T-2)

4.3.10.1. Enhanced Traffic Alert and Collision Avoidance System (ETCAS). Comply with host nation rules governing aircraft flying without ETCAS. (T-2)

4.3.10.2. Ground Collision Avoidance System (GCAS). (T-2)

4.3.11. Cockpit Voice Recorder (CVR). The CVR will be operational for all departures unless parts are not available on station to repair the unit. For failure after departure, flight may continue to a destination with repair capability. Required en route stops are authorized. (T-2)

4.3.12. Digital Flight Data Recorder (DFDR). The DFDR (if equipped) will be operational for all departures unless parts are not available on station to repair the unit. For failure after departure, flight may continue to a destination with repair capability. Required en route stops are authorized. (T-2)

4.3.13. Identification Friend or Foe (IFF)/Selective Identification Feature (SIF). Refer to [Chapter 6](#) for IFF/SIF requirements. Aircraft will not depart with an inoperative IFF/SIF without the approval of ATC and the PIC. (T-2)

Chapter 5

AIRLAND OPERATIONS

5.1. Aircraft Maximum Gross Weight Policy. Aircraft maximum gross weight is 155,000 pounds. Waiver authority for operations up to 165,000 pounds is Operations Group Commander or COMAFSOF/Commander Air Force Forces for AFSOC C-130 operations within their AOR. (T-3) Waiver authority for operations above 165,000 pounds, not to exceed 175,000 pounds, is HQ AFSOC/A3. Operations above 155,000 pounds require an AFTO Form 781A entry with the actual gross weight at which the aircraft was operated. Operations above 155,000 pounds, although structurally possible, are not advisable for routine operations and should be limited due to the increased airframe fatigue and maintenance costs incurred. When operating aircraft at gross weights in excess of 155,000 pounds use primary fuel management and check the limit flight speed versus altitude chart in Section 5 of the flight manual. Aircraft will not be operated in such a manner to exceed flight manual or performance manual limitations during ground or flight operations. Preflight Operational Risk Management (ORM) will focus on takeoff conditions/obstacles and extreme diligence will be used when computing takeoff and landing data (TOLD). Climb out factor and 3-engine climb performance will be incorporated into TOLD cross-check. Tactical operations above 155,000 pounds for non-contingency missions are not authorized. Aircraft will land at or below 155,000 pounds. (T-2)

5.2. Checklists. Accomplish all checklists with strict discipline. A checklist is not complete until all items are accomplished. (T-2) Exception: The After Takeoff Checklist may be called complete with the exception of the leading edge check. Accomplish the leading edge check IAW the flight manual as soon as conditions permit. (T-2)

5.2.1. The Pilot Flying (PF) the aircraft will initiate all checklists unless the flight manual or this instruction establishes another procedure. Aircrews must be familiar with notes, warnings, and cautions without direct reference to TO. (T-2)

5.2.2. Carry abbreviated checklists. The only pages (or inserts) authorized in approved checklists are C-130 series Technical Order (TO) aircrew checklists, AFSOC approved checklists and briefing guides, and OG/OGV approved information guides. Units may construct locally approved in-flight guides using AF Form 4124, AFSOC Flight Crew Information Guide and will provide a copy to OG/OGV for approval. (T-2)

5.2.3. Any personal notes on checklists, briefings, or information guides must be current and accurate. (T-2)

5.2.4. Abbreviated checklist items that do not apply to unit aircraft or mission may be lined out. Do not challenge these items during checklist accomplishment. (T-2)

5.3. Duty Station. Both pilots shall be in their seats during flight. One of the pilots may be out of their seat for brief periods to meet physiological needs. With both pilots in their seats, the PIC may authorize rest periods for one pilot occupying a primary duty station during non-critical phases of flight. Comply with Controlled Cockpit Rest guidance in AFI 11-202, Vol 3. Only one pilot, or the FE, may be absent from their duty station at a time. All aircrew members will notify the PIC prior to departing assigned primary duty station. (T-2)

5.4. Flight Deck Entry.

5.4.1. The following personnel are authorized on the flight deck during takeoff, landing, and critical phases of flight. They must be in compliance with **Paragraph 5.9.2.** (T-2)

5.4.1.1. ACMs/MEPs (if seats are not required by primary crew members or flight examiners). (T-2)

5.4.1.2. Individuals approved by the Group Commander or COMAFSOF. (T-3)

5.4.2. The PIC may authorize passengers to visit the flight deck during non-critical phases of flight. Refer to **Paragraph 3.1.5** for unqualified personnel access restrictions to any primary crew station. (T-3)

5.5. Takeoff and Landing Policy.

5.5.1. An aircraft commander, or above, will occupy either the left or the right seat during all takeoffs and landings. The designated PIC (A-code) is not required to occupy a primary position, but still retains overall authority for conduct of the mission. (T-2)

5.5.2. A qualified Instructor Pilot (IP) or Evaluator Pilot (EP) may take off or land from either seat under any condition.

5.5.3. A qualified Mission Pilot (MP) or First Pilot (FP) may take off and land from either seat. Comply with **Paragraph 5.6.**

5.5.4. A qualified MP/FP will land from the left seat during aircraft emergencies, unless conditions prevent compliance. (T-2)

5.5.5. Pilots in IP upgrade training may take off and land from the right seat under the supervision of an IP or EP when an unqualified pilot occupies the other seat.

5.5.6. A qualified MP will take off/land from the left seat under the following conditions: (T-2)

5.5.6.1. During formation departures and recoveries. Evaluators, instructors and instructor upgrade students may land from the right seat for training, currency, or proficiency. (T-2)

5.5.6.2. During missions operating in hostile airspace (IAW with AFI 11-401) or areas of hostile activity (ORM assessment of High). (T-2) For units operating in defined combat zones, Wg/CC or equivalent may authorize landings from the right seat at specific airfields. (T-3)

5.5.6.2.1. PICs must have accomplished 5 takeoffs and landings at the airfield before allowing their CP to takeoff or land. (T-2)

5.5.6.2.2. CPs must have observed 5 takeoffs and landings at the airfield before they are authorized to takeoff or land. (T-2)

5.5.6.3. At airfields that require any waiver approval. (T-2) **Exception:** Non-Department of Defense (DoD) approach waivers.

5.5.6.4. At certification airfields specified in the HQ AMC Airfield Suitability and Restrictions Report (ASRR). (T-2)

5.5.6.5. For all NVG Airland operations. (T-2) **Exception:** Current and qualified MPs/Mission Copilot (MC)s may accomplish NVG landings from the right seat provided that the left seat pilot is NVG Airland current and qualified. (T-2)

5.5.7. PICs who possess less than 100 hours in command in the C-130 aircraft since initial upgrade will make all takeoffs and landings when the right seat is occupied by a First Copilot (FC)/FP. (T-2)

5.6. Copilot Landing Policy. Except as specified above, and provided no distinguished visitor (DV) four or higher are on board, CPs may takeoff or land. (T-2)

5.6.1. From either seat if an instructor or flight examiner occupies the other seat. (T-2)

5.6.2. From the right seat if the PIC has accumulated at least 100 hours in command in C-130 aircraft since initial upgrade to aircraft commander. (T-2)

5.6.3. If qualified, from the right seat using NVG operations provided that a NVG Airland current and qualified PIC occupies the left seat. Runway width must be 100 ft or greater. (T-2)

5.7. Landing Gear and Flap Operation In-Flight.

5.7.1. The pilot in the right seat will operate the landing gear. Actuate the landing gear only after command of the PF. Prior to actuation of the landing gear, the pilot monitoring (PM) will acknowledge the command by repeating it. (T-2)

5.7.2. Operate the flaps only after the command of the PF. Prior to operating the flaps, acknowledge the command by repeating it. The PIC may assign flap operation to either the PM or the FE. (T-2)

5.8. Use of Outside Observers: Use crew members to assist in outside watch during all taxi operations and in-flight during arrivals and departures. (T-2)

5.9. Seat Belts:

5.9.1. Crew members occupying either the P, CP, or FE seat will have seat belts fastened at all times. (T-2)

5.9.2. Provide all occupants over 2 years of age with seat belts. All occupants will be seated with seat belts fastened during taxi, takeoffs, landings, in areas of forecast clear air turbulence and when turbulence is encountered or anticipated. (T-2) **Exception:** Instructors, evaluators, mission commanders, crew members performing scanner duties, FEs, and AGs performing required duties during taxi, takeoffs and landing; however, they will have a designated seat and required restraint available. (T-2)

5.10. Aircraft Lighting:

5.10.1. Use taxi lights during all taxi operations. Use wingtip taxi lights during night taxi operations. Use landing lights at night in unlighted areas. Use the landing and taxi lights during all takeoffs and landings. Use taxi lights in-flight any time the landing gear is extended unless reflections cause pilot distractions in instrument conditions. (T-2)

5.10.2. Use anti-collision lights or strobe lights from takeoff to landing on all flights. The PIC may turn off anti-collision lights when it is in the best interest of safety to do so.

Aircraft with both anti-collision lights and strobe lights inoperative may continue to a base where repairs can be made. (T-2)

5.10.3. Formation and leading edge lights should be on in addition to the anti-collision/strobe and position lights during operations below 10,000 ft. Landing lights will be used in accordance with AFI 11-202, Vol 3 Chapter 5. (T-2) Note: Formations may vary lighting as necessary provided adequate visual identification of the formation is maintained.

5.10.4. NVG operations may dictate that external lights are turned off or Infrared (IR) lenses used. Conduct training operations with reduced or no external lighting within the confines of designated Restricted or Warning areas or host nation approved areas IAW AFI 11-202, Vol 3. Single ship aircraft will display normal aircraft lighting outside Special Use Airspace (SUA). In standard formation, all aircraft except the last in the formation will display formation lights with brightness set and IR anti-collision lights as required. The last aircraft in the formation will display lights in accordance with AFI 11-202, Vol 3. (T-2)

5.10.5. Contingency operations may dictate that external lights are off and internal lights are limited to the minimum necessary for aircrew activities.

5.11. Advisory/Required Calls.

5.11.1. The PF will announce intentions during departures, arrivals, approaches, and when circumstances require deviating from normal procedures. [Table 5.1](#) through [Table 5.5](#) depict mandatory calls for takeoff, climb out and descent, non-precision approaches and precision approaches. (T-2)

Table 5.1. Departure.

PHASE OF FLIGHT	PM	PF
Takeoff – prior to Refusal Speed	“REJECT” ¹	
At Refusal Speed	“GO” ²	
At Takeoff Speed	“ROTATE” ²	
Note 1: Prior to Refusal Speed, any crew member noting a safety of flight condition/malfunction will state “Reject” and give a brief description of the malfunction.		
Note 2: If refusal speed equals takeoff speed, state “GO” only.		

Table 5.2. Climb Out.

PHASE OF FLIGHT	PM	PF
Transition Altitude	“TRANSITION ALTITUDE” ¹	Note 1
1,000 ft below assigned altitude/FL	“1,000 BELOW”	
Note 1: All crew positions who can change the altimeter setting will state the new setting.		

Table 5.3. Descent.

PHASE OF FLIGHT	PM	PF
Transition Level	“TRANSITION LEVEL” ¹	Note 1
1,000 ft above assigned altitude/FL, initial approach fix, or holding altitude	“1,000 ABOVE”	
Note 1: All crew positions who can change the altimeter setting will state the new setting.		

Table 5.4. Non-Precision/Self-Contained Approaches (SCAs).

PHASE OF FLIGHT	PM	PF
100 ft above procedure turn, step-down, Final Approach Fix (FAF), and Minimum Decision Altitude (MDA)	“100 ABOVE”	
At MDA	“MINIMUMS”	
Runway environment in sight and the aircraft is in a position to execute a safe landing.	“RUNWAY IN SIGHT”	
At Missed Approach Point (MAP)	“MISSED APPROACH POINT”	Note 1
At or below the MDA and the runway environment not in sight or the aircraft is not in a position to execute a safe landing.	“GO AROUND”	
Note 1: The PF will announce intentions to land or go-around no later than the MAP.		

Table 5.5. Precision Approaches.

PHASE OF FLIGHT	PM	PF
100 ft above FAF/glide slope intercept altitude and decision height (DH)	“100 ABOVE”	
At DH with Approach Light System (ALS) in sight (CAT I Instrument Landing System (ILS)) and the aircraft is in a position to execute a safe landing.	“CONTINUE” ¹	Note 2
At DH with runway environment in sight and the aircraft is in a position to execute a safe landing.	“LAND”	Note 2
At or below the DH and the runway environment not in sight or the aircraft is not in	“GO AROUND”	

PHASE OF FLIGHT	PM	PF
a position to execute a safe landing.		
<p>Note 1: With weather at CAT 1 minimums on a CAT 1 ILS, the pilot may only see the initial portion of the ALS. The pilot may continue to 100 Height Above Touchdown (HAT)/Height Above Threshold (HATh) with reference to the ALS but may not descend below 100 ft above touchdown zone elevation using the approach lights as reference unless the red terminating bars or the red side row bars are distinctly visible and identifiable.</p> <p>Note 2: The PF will announce his/her intentions to either land, continue, or go around. Respond intention to “Land” if runway environment is in sight, will remain in sight throughout touchdown and the aircraft is in a position for a safe landing.</p>		

5.11.2. Deviations:

5.11.2.1. The PM will inform the PF when any of the following situations are observed and no attempt is being made to correct the deviation: (T-2)

5.11.2.1.1. Heading or airspeed deviations. (T-2)

5.11.2.1.2. Altitude deviation greater than 100 ft. (T-2)

5.11.2.2. Any crew member seeing a deviation of 200 ft altitude or 10 knots in airspeed, or a potential terrain or obstruction problem, will immediately notify the PF. Deviations from prescribed procedures for the approach being flown will also be announced. (T-2)

5.12. Communications Policy.

5.12.1. Aircraft Interphone:

5.12.1.1. All crew members will monitor the primary NET. Crew members will notify the PIC before going off headset and advise when back on headset. (T-2)

5.12.1.2. Do not discuss classified information on the interphone during unsecure radio transmissions. (T-2)

5.12.1.3. Classified interphone or radio transmissions will be recorded on the CVR if it is operating. Ensure the CVR remains on and running until the tape is clear of any recorded classified conversations. (T-2)

5.12.1.4. Non-aircrew members may monitor interphone or radio transmissions only when specifically approved by the PIC. The PIC will brief communications policy to these personnel prior to flight. The PIC must ensure no one monitors classified information for which they are not cleared or transmits classified information over unsecure radios. (T-2)

5.12.1.5. Sterile Cockpit. Limit conversation to that essential for crew coordination and mission accomplishment during checklists, taxi, munitions upload/download, takeoff, weapons delivery, AAR, approach, landing, and any other critical phase of flight. (T-2)

5.12.2. Command Radios:

5.12.2.1. The PM (or designated crew member) will inform the crew which radio is primary. (T-2)

5.12.2.2. All crew members will monitor the primary radio unless specifically directed to do otherwise by the PIC or subsequent chapters of this instruction. The PIC will designate crew members required to monitor other radios as required. (T-2)

5.12.2.3. During emergencies, request simultaneous UHF and VHF transmissions when operating in a terminal area under radar control. (T-2)

5.12.2.4. One of the pilots will record and read back all ATC clearances. This may be disregarded when ATC instructions require immediate execution or when such action interferes with timely completion of more important duties. All available crew members will back up ATC communications for accuracy, unless otherwise directed by the PIC. (T-2)

5.12.2.5. Communication Reports. Comply with mandatory communication and reporting procedures in the Flight Information Handbook. (T-2)

5.13. Pilot Proficiency with Munitions.

5.13.1. AC-130Ws may conduct pilot proficiency training at joint-use or military (MIL) fields with munitions on board provided a letter of agreement between the OG/OGV or COMAFSOF and airfield manager is on file. A list of approved airfields will be published in local area procedures. (T-2)

5.13.1.1. If an emergency situation requires landing at the airfield, the PIC will ensure the aircraft is parked IAW **Chapter 15, Table 15.2**. (T-2)

5.14. Wind Limitations. Maximum crosswind limits are in accordance with flight manual limitations. Remain within the “recommended” or “caution” areas of the crosswind charts for normal takeoffs and landings. (T-2) Simulated engine out landings (one or two engine inoperative) must fall within the “Recommended” area unless otherwise approved by the Group Commander, or COMAFSOF (for contingency operations). (T-3)

5.15. Runway Condition Reading (RCR) and Runway Surface Condition (RSC): The performance charts used to determine braking action are based on concrete runways. The runway surface should be considered wet when water on the runway causes a reflective glare. The RCR values for the following runway surfaces in **Table 5.6** are estimates based on operational experience and should be used only as a guide.

Table 5.6. RCR Values.

TYPE SURFACE	RCR (DRY)	RCR (WET)
Asphalt	23	12
Aluminum Matting	20	10
M8A1/With Anti-Skid (Pierced Steel Planking (PSP))	20	8
M8A1/Without Anti-Skid (PSP)	13	3
Clay	16	5
Crushed Rock/Coral	16	5

5.15.1. Limit operations into and out of slush or water covered runways to a covering of one inch. This number is based on performance charts where an RSC of 10 is equal to one inch of slush or water. Performance data where more than one inch of slush or water is present may not be accurate. (T-2)

5.16. Wake Turbulence Avoidance. Adhere to aircraft wake turbulence avoidance and separation criteria contained DoD FLIP planning (General Planning [Chapter 5](#)). Acceptance of a visual or contact approach clearance, or instructions to follow an aircraft, is acknowledgment that the pilot will maintain a safe interval for wake turbulence avoidance. (T-2)

5.17. Runway and Taxiway Requirements. Use normal takeoff and landing procedures whenever practical. For mission accomplishment, if approach end overruns are available and stressed or authorized for normal operations, they may be used to increase the runway available for takeoff. All speeds and distances will be computed “without nose wheel steering.” (T-2) For mission accomplishment the PIC may authorize “with nose wheel steering” corrections on dry hard surfaced runways in lieu of downloading cargo/fuel. Use of non-hard surfaced runways or taxiways requires Group Commander, or COMAFSOF approval. (T-3)

5.17.1. Normal Operations:

5.17.1.1. Takeoff. Minimum runway length is critical field length. (T-2)

5.17.1.2. Landing. Minimum runway length is landing distance plus the following correction factors: (T-2)

5.17.1.2.1. Runway Visual Range (RVR) less than 40 ($\frac{3}{4}$ mile)--add 1,000 ft.

5.17.1.2.2. RVR equal to or greater than 40 ($\frac{3}{4}$ mile)--add 500 ft.

5.17.1.2.3. If runway length available for landing is less than required by the previous criteria, crews may use landing ground roll plus 1,500 ft when approved by the squadron commander. (T-3) Landing touchdown must occur in the first 500 ft of the runway/landing surface. (T-2)

5.17.1.3. Minimum runway width is 60 ft or 19 meters. (T-2)

5.17.1.4. Minimum taxiway width is 30 ft or 9 meters. (T-2)

5.18. Aircraft Taxi and Taxi Obstruction Clearance Criteria.

5.18.1. Do not taxi an aircraft within 25 ft of obstructions without wing walkers monitoring the clearance between aircraft and obstructions. With wing walkers, avoid taxi obstructions by at least 10 ft. (T-2) **Exception:** IAW AFI 11-218, *Aircraft Operations and Movement on the Ground*, aircraft may taxi without marshallers/wing walkers at home station along fixed taxi lines which have been measured to ensure a minimum of 10 ft clearance from any obstruction and the obstruction is permanent. Aerospace Ground Equipment (AGE) and vehicles are considered a permanent obstruction provided it is parked entirely within a designated area. Areas will be designated by permanent markings such as painted boxes or lines on the ramp or another suitable means. Adjacent aircraft are also considered a permanent obstruction, provided the aircraft is parked properly in its designated spot and is not moving. (T-2)

5.18.2. When taxi clearance is doubtful, use one or more wing walkers. If wing walkers are not available, the PIC will deplane one or more crew members to maintain obstruction

clearance and provide marshaling using AFI 11-218 signals. Use wing walkers, deplaned crew members, or a crew member on interphone positioned at the paratroop door(s) to act as an observer while maneuvering on narrow taxiways. During night taxi operations, marshallers will have an illuminated wand in each hand. Wing walkers are only required to have one illuminated wand. Observers should be in a position to see wing walkers at all times (through door or windows) and communicate with the pilot. (T-2)

5.18.3. Use low speed ground idle when practical. If Foreign Object Damage (FOD) is a problem, the outboard engines may be shut down provided gross weight, taxiway, and weather are favorable. Verify all sources of brake pressure before shutting down symmetrical engines.

5.18.4. After landing and clearing the runway, with approval of the pilot, the AG may open the aft cargo door and lower the ramp to 12 inches above horizontal, to prepare for ammo offload or onload provided all equipment, cargo, and passengers remain secured in the cargo compartment.

5.19. Reverse Taxi. Use extreme caution while backing the aircraft due to inherent hazards. (T-2)

5.19.1. The pilot will coordinate engine status/utilization with the FE, and taxi directions and signals to be used with the AG and marshaller prior to commencing reverse taxi operations. (T2)

5.19.2. Secure all cargo and ensure all passengers are seated. (T-2)

5.19.3. Open the aft cargo door and lower the ramp to approximately 12 inches above horizontal. (T-2)

5.19.4. The AG will be on the ramp in position to direct reverse taxi, report any hazards, and provide the pilot with timely interphone instructions on turns, distance remaining, condition of the maneuvering area, and stopping point. (T-2)

5.19.5. During night reverse taxi operations, the pilot and AG will ensure that visibility in the taxi area is sufficient to conduct safe taxi operations. The loading lights, retracted landing lights, NVGs, or any other source that provides adequate lighting of the taxi area may be used. (T-2)

5.19.6. Avoid all taxi obstructions, with or without a wing walker, by at least 25 ft. (T-2)

5.19.7. The FE will primarily monitor engine instruments and overheat detection/warning systems for all engines. (T-2)

5.19.8. The CP will primarily monitor outside the aircraft and backup the FE on engine instruments. (T-2)

5.20. Buddy and Windmill Taxi Starts. Buddy and windmill taxi starts must be approved by the Group Commander or COMAFSOF. Group Commanders may delegate this authority to their squadron or mission commander when the unit is deployed. (T-3) This authorization will not be construed to allow repeated buddy or windmill starts at various scheduled en route stops. Load all remaining crew members after completion of the windmill taxi start IAW applicable flight manual. (T-2)

5.21. Takeoff and Landing Obstruction Criteria.

5.21.1. PICs will comply with the ASRR requirements prior to operating at airfields classified as “special PIC airports” or “certification airfields” by the ASRR. (T-2)

5.21.2. An airfield is considered suitable for C-130 operations when:

5.21.2.1. After review of HQ AMC/DOAS ASRR the airfield is listed as suitable, see AFI 11202, Vol 3 AFSOCSUP1, [Chapter 2](#). Waiver authority for the ASRR rests with the HQ AFSOC/A3. (T-2)

5.21.2.2. No obstructions or rising terrain exceed the shaded areas of **Figure 5.1**. This ensures clearance only if the aircraft is maintained within 35 ft of runway centerline and a bank of five degrees is not exceeded. (T-2)

5.21.2.3. When an obstruction or terrain exceeds the shaded areas of **Figure 5.1**, specific approval by the Wing or Group Commander, or COMAFSOF is required and the PIC must be advised of the height and location of the obstructions as well as specific procedures to avoid the obstruction (e.g., landing beyond obstacles). (T-3)

5.21.3. [Figure 5 2](#) provides obstruction clearance criteria for ground operations. It depicts maximum obstacle or terrain heights at specified distances to ensure clearance with the main landing gear on the edge of the operating surface. PICs will be advised of any known obstructions that exceed the shaded areas. (T-2)

Figure 5.1. Takeoff and Landing Obstruction Clearance Criteria.

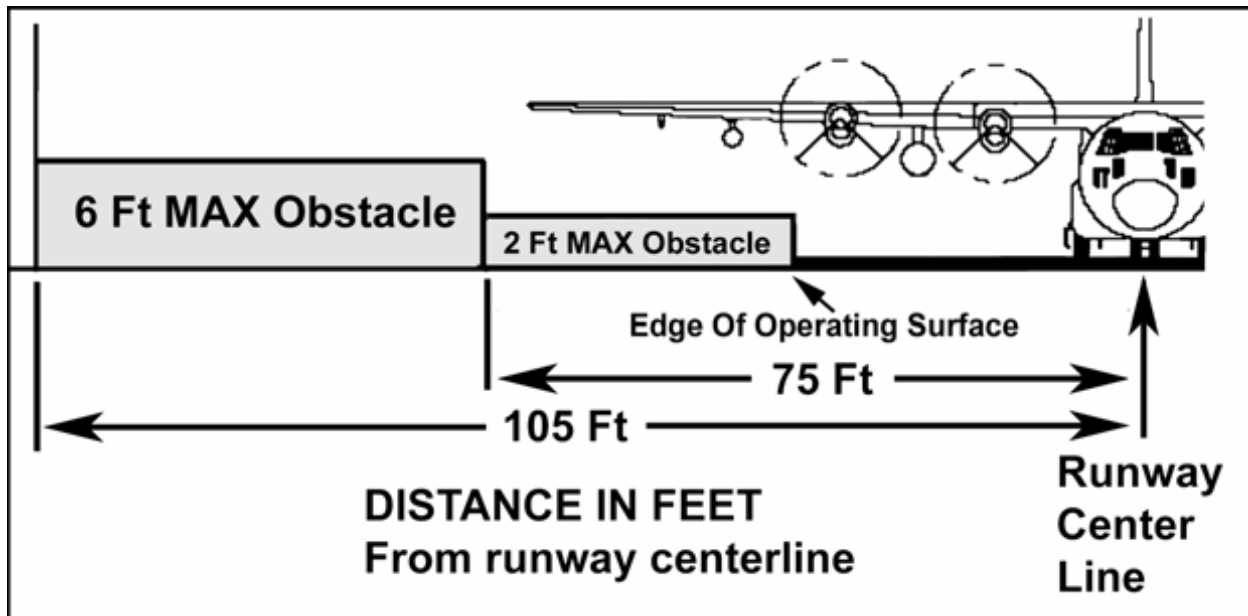
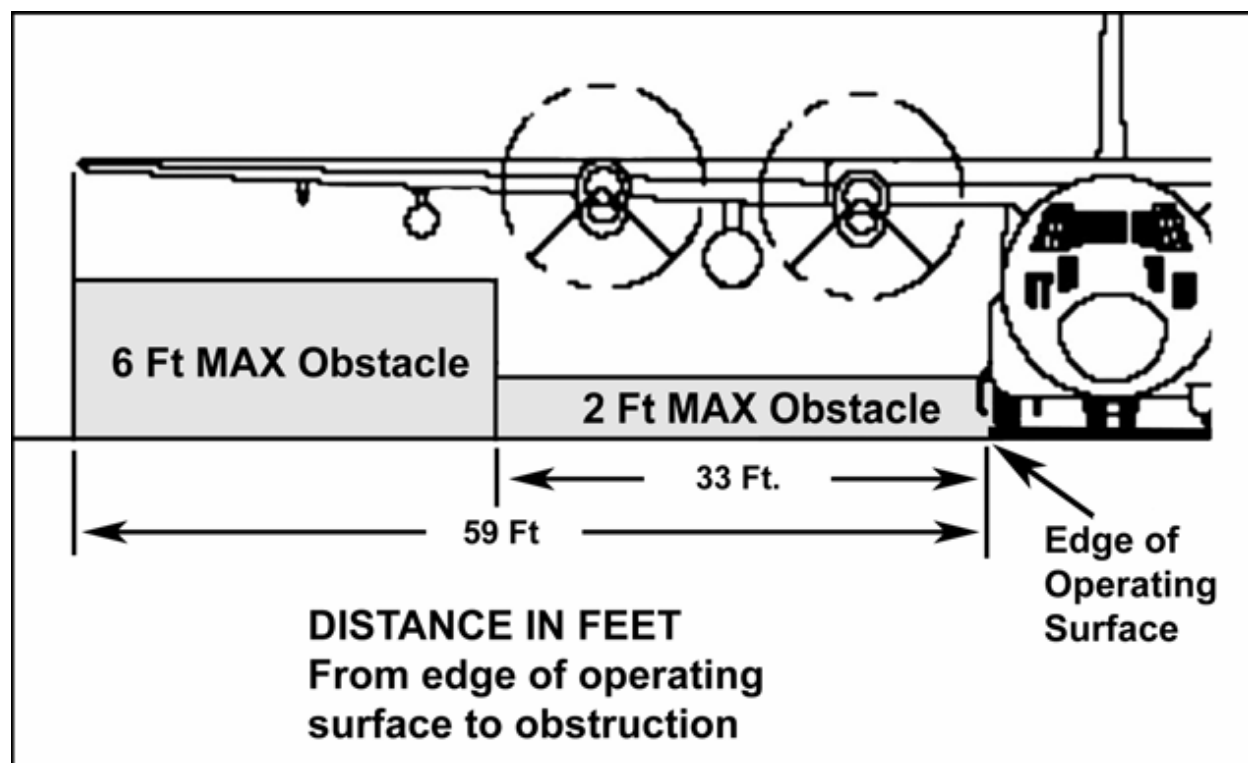


Figure 5.2. Ground Operations Obstruction Clearance Criteria.

5.22. Inter. Normally, initiate takeoffs from the beginning of the approved usable portion of the runway. The decision to make intersection takeoffs rests solely with the PIC. Base TOLD card computations on runway remaining from the point the takeoff is initiated. (T-2)

5.23. Reduced Power Operations. Reduced power operations are intended to prolong engine service life and should be used any time maximum power is not required.

5.23.1. During proficiency air work (flights or operations that are mainly confined to any local traffic pattern), when reduced power is used, Turbine Inlet Temperature (TIT) will not be less than 900° Celsius (C) for takeoff, not to exceed 19,600 inch-pounds of torque. (T-2)

5.23.2. Reduced power for formation takeoffs to a torque corresponding to no less than 1010° C TIT for takeoff. Lead will reduce power to 970° C TIT once climb speed is obtained. (T-2)

5.23.3. Climb power to cruise altitude will be 1010° C TIT, not to exceed 19,600 inch-pounds of torque, unless mission requirements dictate otherwise. (T-2)

5.24. Three-Engine Takeoffs. Actual engine-out takeoffs require HQ AFSOC/A3 waiver. (T2)

5.25. Aircraft Recovery from Unprepared Surfaces. Aircrews should not normally attempt to recover an aircraft after inadvertent entry onto soft, unprepared surfaces not suitable for taxi. Ground crews using the appropriate equipment will accomplish aircraft recovery. Aircrews may accomplish recovery at austere locations if, after thorough inspection, the PIC is sure there is no damage and the surface will support the aircraft. If there is damage or if there is any doubt that the surface will support the aircraft, aircrews will not attempt recovery. (T-2)

5.26. Engines Running Onload or Offload (ERO). Do not use ERO procedures when explosive cargo is involved unless authorized by the Joint Airborne/Air Transportability Training (JA/ATT) exercise operation order or contingency Air Tasking Order (ATO). (T-2)
Exception: Ordnance intended to be employed by the aircraft may be loaded with engines running IAW appropriate flight manual and local operating procedures.

5.26.1. The ERO procedures in this paragraph may be used for any mix of personnel or cargo. The aft cargo door and ramp is preferred when more than 10 passengers are involved. The PIC will assess prevailing weather, lighting, and parking location to ensure a safe operation. (T-2)

5.26.2. General Procedures:

5.26.2.1. The PIC will brief crew members on the intended ERO operation, emphasizing specific crew member duties. (T-2)

5.26.2.2. The parking brake will be set and one pilot will monitor brakes, interphone, and radio. (T-2)

5.26.2.3. Operate engines in ground idle (low speed, if applicable). If conditions warrant, open air deflector door and lower flaps to reduce prop or jet blast aft of the aircraft. (T-2)

5.26.2.4. Turn wing leading edge lights on during night ERO. Taxi lights may be used at the discretion of the PIC. (T-2)

5.26.2.5. Resume taxi after the AG has verbally acknowledged that the aircraft is ready for taxiing. Complete passenger and cargo manifests, crew lists and DD Form 365-4, *Weight and Balance Clearance Form F*, for the subsequent sortie. (T-2) **Note:** DD Form 365-4 is not required for the subsequent sortie if the aircraft will depart empty.

5.26.2.6. Do not onload or offload through two different doors simultaneously. (T-2)
WARNING: Due to the hazards involved (i.e., propeller blast, proximity to engines and propellers, lack of paratroop door steps, etc.), only hand transferable items of cargo may be on/offloaded through the paratroop doors during EROs. (T-2)

5.26.3. Personnel onload and offload through the crew entrance door. (T-2)

5.26.3.1. The PIC will give clearance to open the crew entrance door. (T-2)

5.26.3.2. During enplaning and deplaning, station a crew member (normally the AG) on interphone (cord held taut) approximately 25 ft and at a 45 degree angle from the aircraft axis. (T-2)

5.26.3.3. Brief deplaning personnel to remain forward of the interphone cord. (T-2)

5.26.4. Personnel or cargo onload and offload through the aft cargo door and ramp. (T-2)

5.26.4.1. After clearance from the pilot, open the aft cargo door, and lower the ramp as required. (T-2)

5.26.4.2. The AG will direct all onload and offload operations. Passengers will be escorted by a crew member when enplaning or deplaning. Deplane passengers before cargo and enplane passengers after cargo unless cargo size or location dictates otherwise. (T-2)

5.26.5. ERO for crew changes during local training missions is authorized provided the enplaning crew does not approach the aircraft until the deplaning AG is in position outside the aircraft. Keep ERO for crew changes to the absolute minimum necessary to accomplish the mission. (T-2)

Chapter 6

GENERAL OPERATING PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniforms.

6.1.1. Wear the aircrew uniform as outlined in AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, and AFI 11-301, *Aircrew Flight Equipment (AFE) Program*, on all missions, unless other attire is authorized. When the USAF Foreign Clearance Guide (FCG) requires civilian attire, dress conservatively. (T-2)

6.1.2. All aircrew members will have flight gloves readily available during all flights and will wear them for takeoffs, landings, and when operating in a combat environment. (T-2)
Exception: The PIC may exempt crew members from wearing gloves during non-terminal operations in a combat environment based threat assessment, mission, and crew considerations.

6.1.3. Crew members will remove rings and scarves before performing aircrew duties. (T-2)

6.1.4. Arctic clothing is required when engaged in Arctic or Antarctic operations, or when required by local operating procedures. (T-2)

6.2. Personal and Professional Equipment.

6.2.1. Passports. Carry passports on missions when required by the FCG. (T-2)

6.2.2. Shot Records. Aircrew members will ensure they meet immunization requirements for the mission. (T-2)

6.2.3. Identification Tags. Identification tags will be carried on the person during all flights, i.e., worn around the neck, in a flight suit pocket, or attached to a boot, etc. (T-2)

6.2.4. FOD Hazards. Crew members will not wear wigs, hairpieces, rings, ornaments, pins, clips, other hair fasteners, or earrings in the aircraft or on the flightline. (T-2)
Exception: Plain elastic hair fasteners or plastic barrettes are allowed, providing they do not interfere with the wearing of headsets or helmets, or the donning of oxygen equipment. All devices will be accounted for before and after flight.

6.2.5. Restricted Area Badges. Carry the restricted area badge on all missions (except actual combat missions). Display the badge only in designated restricted areas. (T-2)

6.2.6. Reflective Belts. Wear reflective belts in accordance with local operating guidelines. (T2)

6.2.7. Tool Kits. A tool kit will be on board for all flights. Individual units will establish requirements for tools to be included in these kits and the crew member responsible for the kit (Hostile Environment Repair Kit (HERK) tool kits satisfy this requirement). (T-2)

6.2.7.1. Gun Tool Kits. The AG will ensure a gun tool kit is on-board for all live fire missions. Gun tool kit contents will be determined by unit stan/eval office. Additionally AGs will ensure gun-clearing tools are available at off-station locations if the hot gun return location is not planned for home station. (T-2) **WARNING:** AGs will not clear

guns from outside the aircraft unless mission requirements dictate and no qualified maintenance/Explosive Ordnance Disposal (EOD) personnel are available to do so. (T-2)

6.2.8. Hostile Environment Repair Kit. One HERK will be onboard for all missions. Units will identify where the HERK will be stored on the aircraft in the local supplement to this instruction. The FE will ensure the HERK is onboard and serviceable (secured) during the aircraft preflight prior to departure. (T-2)

6.2.9. Preflight and carry a headset, helmet and oxygen mask, and operable flashlight on all flights. (T-2)

6.2.10. NVGs. All crew members required to carry NVGs will preflight them prior to flight for missions using NVGs. If available, the PIC will preflight and carry one spare set of NVGs. Each crew member will carry approved spare batteries for their own NVGs. (T-2)

6.2.10.1. Pilots will wear NVGs with similar acuity and gain. (T-2)

6.3. Aircrew Publications Requirements.

6.3.1. Publications specified in **Table 6.1** will be carried during all ground/flight operations. Units may specify additional publications in their local supplement. (T2)

Table 6.1. Aircrew Publications.

TO 1C-130(A)W-1, <i>Flight Manual</i>
TO 1C-130H-1-1, <i>Performance Data</i>
Abbreviated TO 1C-130(A)W-1 Checklists
ATP-56(B) (Parts 1 and 2 and required annexes)
TO 1C-130-1-4, <i>Self Contained Navigation System</i>
TO 1C-130A-9, <i>Cargo Loading Manual</i>
AFI 11-202, Vol 3, <i>General Flight Rules</i>
AFI 11-2AC-130W, Vol 3, <i>AC-130W Operations Procedures</i>
AFTTP 3-3.AC-130(W) (or equivalent) <i>AC-130W Tactics, Techniques, and Procedures</i>
AFSOC MAN 11-201, <i>Hostile Environment Repair Procedures</i>
Flight Crew Information Summary (FCIS)

6.3.2. Electronic Publications (E-Pubs). See AFI 11-202, Vol 3 and AFSOC Supplement. (T-2)

Section 6B—Pre-Departure

6.4. Flight Crew Information File (FCIF). Review volume I, part A, of the FCIF before all missions. Crew members will certify their FCIF review as approved by Group Stan/Eval (i.e., Patriot Excalibur (PEX), AF Form 4121 *FCIF Currency Record*, Flight authorization, etc.). (T2)

6.4.1. PICs will verify crew members have certified FCIF review prior to flight. (T-2)

6.4.2. Crew members delinquent in FCIF and joining a mission en route will receive an FCIF update from their primary aircrew member counterpart on that mission. Instructor pilots flying with general officers are responsible for briefing appropriate FCIF items. (T-2)

6.4.3. Crew members that do not have a unit FCIF card (or if PEX is not available) will certify FCIF review by entering the last FCIF number and their initials beside their name on the file copy of the flight authorization or their ACM orders. (T-2)

6.4.4. For PICs flying outside the Continental United States (CONUS), initialing the AF Form 4121 also certifies review of the unit classified airfield threat and security evaluation file. If no new material has been added to Volume I since the last review, complete the date and initials columns and leave the FCIF number column blank (T-2)

6.5. Aircraft Mission Kits. Units will maintain one mission kit per aircraft. The entire mission kit, with the exception of any forms required in hard-copy format, may be stored electronically on an approved e-tools device. Prior to off-station departures, the PIC or a designated representative will ensure a current mission kit is on board the aircraft either in electronic or paper format. The kit will contain, but is not limited to the items listed in **Table 6.2**. Items required by a unit or wing directive to be carried by an individual crew member need not be duplicated in the mission kit. Maintain sufficient quantities of directives and planning documents to allow implementation of evacuation and contingency plans. (T-2)

Table 6.2. Aircraft Mission Kit.

SECTION I – Publications	
<ol style="list-style-type: none"> 1. AFI 11-2AC-130W, Volume 1, <i>AC-130 Aircrew Training</i> 2. AFI 11-2AC-130W, Volume 2, <i>AC-130 Aircrew Evaluation Criteria</i> 3. AFI 11-401, <i>Aviation Management</i> 4. DoDM 4140.25-M, <i>DoD Management of Bulk Petroleum Products</i> 5. ATP-56(B), <i>Air-to-Air Refueling</i> 6. TO 1C-130-1-4 (SCNS airplanes only) 	
SECTION II – Forms	
1. <u>AF Forms:</u> <ol style="list-style-type: none"> a. 15, USAF Invoice b. 70, Pilot's Flight Plan and Log c. 315, USAF AV Fuels Invoice d. 457, USAF Hazard Report e. 651, Hazardous Air Traffic Report f. 1297, Temporary Issue Receipt g. 2282, Statement of Adverse Effect – Use of Government Facilities 	2. <u>DD Forms:</u> <ol style="list-style-type: none"> a. 175, Military Flight Plan b. 175-1, Military Weather Brief c. 1385, Cargo Manifest d. 1801, DoD International Flight Plan e. 1854, US Customs Accompanied Baggage Declaration or CF6059B, Customs Declaration f. 2131, Passenger Manifest

h. 4051, Low Level Flight Plan and Log i. 4053, INS Flight Plan Log j. 4063, Pilot Information Card k. 4064, C-130 Takeoff and Landing Card l. 4108, C-130 Fuel Log m. 4116, C-130 Flight Plan Record n. 4118, SCA Planning Form o. 4119, C-130 Fuel Planning Worksheet p. 4125, Range Control Chart q. 4139, SPECIAL OPERATIONS C-130 IN-FLIGHT REFUELING WORKSHEET	g. CF 7507, General Declaration (Outward/Inward)
	3. <u>AFSOC Forms:</u> a. 88, Dedicated Crew Chief Trip Report b. 97, AFSOC Aircraft Incident Report
SECTION III - Miscellaneous	
1. Foreign Nation Custom Forms (when applicable)	
2. All applicable local forms	

Section 6C—Briefings

6.6. Briefing Requirements. Crew members and supporting/supported forces will not fly unless they attend the crew briefings for their mission. (T-2) **Exception:** When pre-mission requirements dictate, PIC may excuse certain members from the briefing. The PIC will ensure that those members receive a face-to-face briefing prior to engine start. (T-2)

Section 6D—Flight Planning

6.7. Call Signs. Use Voice Call Sign Listing (VCSL) if specified in mission directives. Otherwise, use squadron or wing static call signs as directed. (T-2)

6.7.1. Search and Rescue (SAR). When tasked to participate in SAR operations, use the call sign “AIR FORCE RESCUE” plus the last five digits of the aircraft tail number. (T-2)

6.8. Flight Plans. Regardless of whether a flight plan is prepared by the aircrew or is furnished by another agency, the PIC and NAV will verify routes and flight altitudes to ensure proper terrain clearance. (T-2)

6.9. Fuel Planning. Use the appropriate fuel planning publication or Technical Order specified in **Chapter 11**, or an approved Portable Flight Planning System (PFPS). (T-2)

6.10. Departure/Arrival Planning.

6.10.1. The PIC will provide the obstacle height, distance, and gradient information necessary for performance computations for the departure, alternate, and destination airfields to the FE. As a minimum, review the appropriate terrain chart or sectional chart in addition to the SID (if applicable). The FE will complete the AF IMT Form 4064 *C-130 Takeoff and Landing Data Card*, and the AF IMT Form 4063 *Mini C-130 TOLD Card*, in accordance

with **Chapter 12**. A pilot or additional FE will cross-check the AF IMT Form 4064/4063 for accuracy by using the performance manual, TOLD computer, or approved tabulated data. As a minimum, the person checking the data will: (T-2)

6.10.1.1. Verify gross weight independently from the AF IMT Form 4063/4064. (T-2)

6.10.1.2. Cross-check air minimum control, takeoff, and landing speeds. This should be done for the initial takeoff, landing, and for significant changes in operating conditions (e.g., flaps up, etc.). (T-2)

6.10.1.3. Review and compare the computed distances, ground roll, and climb gradient (if applicable) with the actual conditions, runway available, and departure procedures. (T-2)

6.10.2. Normally use reduced power for takeoffs provided Refusal Speed (V_r) is equal to or greater than takeoff speed. Use normal takeoff power if V_r is less than takeoff speed. (T-2)

6.10.3. Flight Rules. Comply with AFI 11-202, Vol 3 AFSOC Supplement 1, and AFMAN 11-217, Vol 1/2 requirements for: Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) departures and arrivals; en route weather requirements; and weather requirements for departure, alternate, and destination airfields. (T-2)

6.10.3.1. VFR Departures. Comply with AFMAN 11-217, Vol 2, AFI 11-202, Vol 3, and the following: The aircraft must be capable of clearing all obstacles along the planned departure path or emergency return route with one engine inoperative. When no higher climb gradient is required, the aircraft must always be able to climb at least 200 ft per minute on three engines at obstacle clearance speed. When no obstacle exists on the planned departure, plan climb out to 1,000 ft Above Ground Level (AGL) or pattern altitude whichever is higher. (T-2)

6.11. Airfield Review. Accomplish review IAW AFI 11-202, Vol 3 and AFSOC Supplement 1. (T-2)

6.12. Intelligence Briefing. Before departing on missions outside the United States, crews will receive an intelligence briefing that will emphasize terrorist, enemy, and friendly political and military development in the area in which they will be operating. In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location, or en route stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence officers at the completion of each mission. (T-2)

6.13. Authenticators and Classified Material. Obtain and safeguard current authenticators and other classified materials required for the area being transited. Carry authenticators and IFF Mode IV codes when flying into an Air Defense Identification Zone (ADIZ), participating in exercises, on overseas missions, deployments, and when specified in operation plans. (T-2)

6.13.1. The Communications Security (COMSEC) material required depends on the theater of operation and user. The base COMSEC custodian can assist in obtaining the material required for the mission. Base Operations at AMC bases maintains the COMSEC material used on most missions.

6.13.2. Turn in authenticators and other classified materials at your ultimate destination and obtain receipts for classified material. Command and Control Center will provide temporary storage for authenticators/classified materials during ground time at en route stops. Issue and

turn-in of authenticators is normally a function of Base Operations. At locations where no storage facilities exist, classified materials may be stored in the aircraft safe, if available. (T-2)

6.13.2.1. Remove classified information stored in the GPS, INS, or mission computers. (T-2)

6.13.2.2. Clear all Transmission Security (TRANSEC) systems, such as secure voice and IFF. (T-2)

6.13.3. In the event of an emergency, destroy classified material and equipment prior to crash landing or bailout, if possible. (T-2)

6.14. Mission Folder. Each unit will develop a mission folder for each mission to ensure all pre-departure information is available to aircrews. (T-2)

6.15. Route Navigation Kits.

6.15.1. The PIC or a designated crew member will be issued a route navigation kit at the home station, which will remain with the aircraft until its return. Kits should contain sufficient quantities of materials to cover the complete round trip from the issuing station and return, plus appropriate materials to cover the theater of operation. This kit may be carried electronically following AFI 11-202, Vol 3 and AFSOC Supplement guidance. (T-2)
Exception: En route charts will be readily available in paper or electronic format in-flight at all times. (T-2)

6.15.2. If carried in paper format, segregate route navigation kits into two separate parts: (T-2)

6.15.2.1. Part I. Sufficient material to cover the planned route trip and theater of operation.

6.15.2.2. Part II. For inter-theater missions only. Maps, charts, and flight information publications for global operation, excluding items in Part I.

6.15.3. Group CC/COMAFSOF may augment kits as necessary to meet special operational requirements. (T-3)

6.15.4. Minimum contents of route navigation kits will be in accordance with **Table 6.3**. Commanders may modify the items as necessary for local training missions. (T-2)

Table 6.3. Route Navigation Kits.

Item (Applicable to Area of Operations)	Part I	Part II (Global)
FLIP Planning (GP, AP/1, AP/2, AP/3, AP/4)	1	1
FLIP IFR Supplement	2	1
FLIP Flight Information Handbook (FIH)	2	1
FLIP En Route Charts (High and Low)	2	1
FLIP Area Charts (Terminal)	2	1
FLIP Instrument Approach Procedures (High and Low)	3*	1

Standard Instrument Departures (SIDs)	3*	1
Standard Terminal Arrival (STAR)	3*	1
OPREP-3 Report Format	1	1
Maps and Charts	As Req'd	1 ea. GNC
FLIP VFR Supplement	1	
Current Air Almanac	1	
AF Form 72, Air Report (AIREP)	3	
* Two required when a NAV is not part of the crew.		

6.16. Adverse Weather.

6.16.1. Flight into areas of forecast or reported severe turbulence is prohibited. (T-2)

6.16.1.1. Anytime wind shear may be encountered on departure or approach, it is recommended that aircrews select wind shear mode on a radar display.

6.16.1.2. The PIC is responsible for ensuring all passengers are seated, with seat belts fastened, when areas of moderate or greater turbulence are encountered or anticipated. (T-2) **WARNING:** Serious injury may occur if passengers do not have their seat belts fastened and the aircraft encounters moderate or severe turbulence.

6.16.2. Flight into areas of forecast or reported severe icing is prohibited. Prolonged operation, such as cruise flight or holding, in areas of moderate icing should be avoided. (T-2)

6.16.2.1. Do not takeoff under conditions of freezing rain or freezing drizzle. (T-2)

6.16.2.2. Freezing precipitation, snow, freezing fog (consider equivalent to moderate icing), or temperatures near 0°C, may cause ice or frost to accumulate on aircraft surfaces. When an aircraft requires de-icing/anti-icing prior to takeoff, refer to the following:

6.16.2.2.1. Aircrews will only use de-ice and anti-ice fluids listed in their respective flight manual. Aircrews will be familiar with, and follow all restrictions in their associated flight manual with respect to anti-ice/de-ice procedures and holdover times. (T-2)

6.16.2.2.2. Military (MIL)-A-8243 Type I and Type II de-icing fluids do not provide any antiicing benefit, and therefore do not have holdover times. As a guide, for approved anti-icing fluids, crews may use published anti-icing holdover times IAW TO 42C-1-2, *Aircraft Anti-icing Procedures*, and AFFSA holdover tables are located at <https://cs1.eis.af.mil/sites/AFFSA/A3O/A3OF/Forms/AllItems.aspx>. The holdover time begins when anti-icing fluid is first applied and the PIC shall use time, temperature, and dilution of mixture to determine when times are exceeded and reapply fluid if required.

6.16.2.2.3. In all cases, PICs will ensure a visual inspection of the aircraft is completed within 5 minutes of departure. (T-2)

6.16.3. Do not fly directly above (within 2,000 ft) thunderstorms or cumulonimbus clouds. If unable to clear thunderstorms or cumulonimbus clouds by at least 2,000 ft vertically, avoid them by at least: (T-2)

6.16.3.1. 20 nm at or above flight level (FL) 230.

6.16.3.2. 10 nm below FL 230. **CAUTION:** Aircraft damage may occur 20 nm or more from any thunderstorms. Aircrews must familiarize themselves with information on thunderstorm development and hazards. Refer to AFH 11-203, *Weather for Aircrews*.

6.16.4. The use of ground-based radar as a means of thunderstorm avoidance should only be used to assist in departing an inadvertently penetrated area of significant weather. It should never be considered a normal avoidance procedure. When relying exclusively on ground-based radar for weather avoidance, and the ground controller is unable to provide avoidance instructions, attempt to maintain VMC by:

6.16.4.1. Changing routing.

6.16.4.2. Diverting to an alternate location.

6.16.4.3. Declaring an emergency and requesting priority assistance.

Section 6E—Pre-flight

6.17. Operational Risk Management (ORM). ORM is a logic based, common sense approach to making calculated decisions on human, material, and environmental factors before, during, and after all operations. USAF policy on ORM is contained in Air Force Policy Directive (AFPD) 90-9, *Operational Risk Management*. PICs will accomplish ORM worksheets IAW AFSOC/MAJCOM and local guidance as part of preflight activities. (T-2)

6.17.1. Flying units will develop a local ORM program to include personal ORM risk assessment for all missions. (T-2)

6.17.2. The PIC will ensure an ORM risk assessment is accomplished by all crew members as part of preflight activities. (T-2)

6.18. C-130 Dash One Preflight.

6.18.1. The aircrew Dash One preflight inspection, once completed, is valid for 72 hours provided the aircraft is either sealed or continuously monitored by squadron personnel. (T-2)

6.18.2. When an aircrew assumes a preflighted spare or quick-turn, a thorough visual inspection will be performed, paying particular attention to areas affected by maintenance or servicing. (T2)

6.18.3. Dash One preflight inspections are normally done in preparation for flight by the aircrew assigned to fly the mission designated for that aircraft. Do not schedule pre-flight crews to perform pre-flight inspections on primary aircraft for local training flights. (T-2)

Exception: Preflight crews may be scheduled to preflight aircraft during Operational Readiness Exercises (OREs), Consolidated Unit Inspections (CUIs), and contingencies.

6.18.4. The following guidelines apply to aircrew assigned to preflight and/or seal aircraft. Crew members will not preflight more than 4 aircraft in a 12-hour period or perform preflight duties for more than 12 hours. Crew rest according to AFI 11-202 Vol3 is required.

Aircrews performing preflight duties will be afforded 12 hours crew rest between preflight shifts. (T-2)

6.18.4.1. Duty Not Including/Involving Flight (DNIF) crew members may accomplish preflights only with the concurrence of the flight surgeon. It is the responsibility of the crew member to know his/her duty limitations. If possible crew members should have the flight surgeon document the AF Form 1042 appropriately IAW with AFI 48-123, *Medical Examinations and Standards*, Vol 3. (T-2)

6.18.5. Unqualified crew members may not preflight aircraft except under the supervision of an instructor. (T-2)

6.19. AFTO Form 781. Review the AFTO Form 781 before applying power to the aircraft or operating aircraft systems. The Exceptional Release (ER) must be signed before taxi. A maintenance officer, maintenance superintendent, or authorized civilian normally signs the ER. If one of these individuals is not available, the PIC may sign the ER. Ensure that the DD 1896, Jet Fuel Identiplate and AIR card are on board the aircraft. (T-2)

6.20. Authority to Clear a Red X. Aircrew are not normally authorized to clear a Red X. In a situation where the aircraft is on a Red X and qualified maintenance personnel are unavailable, the PIC or FE may obtain authorization to clear the Red X from the home station Maintenance Group (MXG)/CC or designated representative in accordance with TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*. (T-2)

6.20.1. At en route stations, FE's are authorized to sign off Red X symbols for intake/exhaust inspections, dust covers and plugs installed, and aircraft panels removed and installed to facilitate other maintenance when qualified personnel are not available. (T-2)

6.20.2. Other crew members are not authorized to clear a Red X. (T-2)

6.21. In-Process Inspections. FEs must be aware of their responsibility to perform in-process inspections when clearing Red X symbols. During the assembly or reassembly of an item at those stages where further assembly will prevent the required inspection of the item, an in-process inspection will be performed. The inspection will be documented IAW TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*. (T-2)

6.22. One-Time Flights. An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use, provided the aircraft is airworthy for one flight to a repair station. Refer to TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, for Red-X downgrade authority and procedures. (T-2) One-time flight approval authority is OG/CC or COMAFSOF. (T-3) The owning MXG/CC (or designated official), the senior maintenance officer, or the chief of the AFMC repair team must first authorize the release. After the maintenance release is obtained, contact OG/CC, via stan/eval channels, for flight authorization. The PIC's concurrence is required before the aircraft can be flown. (T-2)

6.23. Alert Aircraft Procedures. Maintain aircraft on alert status as follows: (T-2)

6.23.1. Park the aircraft in a designated alert parking area to expedite taxi and takeoff. (T-2)

6.23.2. Aircraft preflight times should align the alert period and aircraft preflight validity period, eliminating the need to update the preflight during the alert period. Whenever operationally feasible, have a crew other than the alert crew preflight the alert aircraft.

6.23.3. The alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are met: (T-2)

6.23.3.1. Ensure sufficient fuel remains on board to meet alert commitments.

6.23.3.2. Maintain communications with the primary controlling agency.

6.23.3.3. If maintenance actions are not required, the aircraft can be resealed for alert once the through-flight inspection is completed. In all cases, a new preflight is not required until the end of the initial preflight period.

6.23.4. A DD Form 365-4, *Weight and Balance Clearance, Form F*, will be prepared for the alert aircraft. Alert crews are authorized to prepare a TOLD card using the worst weather conditions expected for the alert period. Use the TOLD for alert scrambles. If the alert aircraft is flown for other reasons, use TOLD for the existing weather conditions. (T-2)

6.23.5. If the alert aircraft is changed to a different, preflighted/sealed aircraft, the preflight or alert crew will, as a minimum, apply power to the aircraft and check the following systems (as applicable): (T-2)

6.23.5.1. AFTO Form 781, *Aerospace Vehicle Flight Data Record*.

6.23.5.2. Interior and exterior for proper configuration and special equipment.

6.23.5.3. Fuel quantity.

6.23.5.4. Survival and emergency equipment.

6.23.5.5. Navigation and communication equipment.

6.23.5.6. Liquid oxygen quantity.

6.23.5.7. Hydraulic reservoirs and accumulator charges.

6.23.5.8. Publications.

6.23.6. When an aircraft remains on alert for more than 72 hours, a complete aircrew preflight is then required. (T-2)

6.23.7. Once the aircraft is accepted for alert, the FE will ensure an entry is made in the AFTO Form 781H, *Aerospace Vehicle Flight Report and Maintenance Document*, stating as a minimum, the date and time the aircraft was preflighted. (T-2)

6.23.8. Alert aircraft are off limits to all personnel except alert crew members. No maintenance may be performed on the aircraft without the approval of the unit/mission commander. Upon receiving orders to launch, the crew is required to check the area in which maintenance was performed prior to flight. (T-2)

6.24. Aircraft Servicing and Ground Operations.

6.24.1. Aircraft Refueling. Crew members qualified in refueling may perform refueling duties at austere locations or at stations without maintenance support. Crew members acting as refueling supervisors and panel operators will comply with TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, TO 1C-130(A)W-1 and refueling job guide. Crew chiefs should be scheduled on those missions where a need is anticipated. Two qualified personnel are required. Aircrews should not refuel except in cases when maintenance support is not readily available and the mission would be delayed. (T-2)

6.24.1.1. FEs are qualified and authorized to accomplish these duties when maintenance personnel are not available. If ground support personnel are not available, the PIC will designate other crew members to assist the FE. Use the appropriate checklist during all refueling and defueling operations. (T-2)

6.24.1.2. Specific program aircraft are authorized to use JP8+100. Units at bases with JP8+100 are program aircraft and may use either JP8+100 or JP8. (T-2)

6.24.1.3. AFSOC non-program aircraft will not operate on JP-8+100, except in emergency conditions. Non-program units will not use JP-8+100 and will make all efforts to avoid refueling with JP-8+100. JP-8+100 locations are required to maintain a clean JP-8 capability to support transient aircraft. If JP-8+100 refueling inadvertently occurs, comply with the following: (T-2)

6.24.1.4. De-fuel the aircraft prior to flight. (T-2)

6.24.1.5. Make an AFTO Form 781 entry stating "Caution: Aircraft refueled using JP-8+100, preventative measures must be taken when de-fueling." (T-2)

6.24.1.6. Concurrent Ground Operations. The PIC and Concurrent Servicing Supervisor (CSS) shall ensure aircrew members and servicing personnel accomplish concurrent servicing in accordance with TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, and servicing technical orders. Aircrews performing Dash-1 preflight inspections or cargo loading concurrent with servicing must have cooperation and close coordination with the CSS. The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation. In keeping with the guidelines in TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, CSS has authority over all phases of CSS operations to include personnel participating in the refuel. (T-2)

6.24.1.7. Simultaneous fuel and oxygen servicing is not authorized. (T-2)

6.24.1.8. Simultaneous fuel servicing and ammunition loading is not authorized. (T-2)

6.24.2. Liquid Oxygen Servicing. Under no conditions are crew members allowed to service liquid oxygen. (T-2)

6.24.3. Hot Refueling. Hot refueling (refueling with aircraft engines running) will only be conducted by crews that have been authorized and certified according to AFSOC Hot Refueling Guide, *C-130 Hot Refueling Operations Procedures*. (T-2)

6.24.4. Fire Protection and Crash Rescue.

6.24.4.1. The aircraft engine fire extinguisher system fulfills the minimum requirements for fire protection during engine start. If available, position a portable fire extinguisher for added fire protection.

6.24.4.2. A fireguard is required for all engine starts including the APU. A crew member or ground controller may act as fireguard. (T-2)

6.24.5. Aircrew/Maintenance Engine Runs. Mixed aircrew/maintenance engine runs will not normally be accomplished. If conducted, the appropriate -1 procedures will be used. (T-2)

6.24.6. Propulsion System Checks (Engine Runs). When conducting maintenance-requested propulsion system checks, comply with the following: (T-2)

6.24.6.1. Prior to conducting the checks, complete an ORM assessment and review risk mitigation actions. The minimum crew complement for the checks will be the crew complement required for aircraft taxi. Start with the preflight checklist and accomplish all checklists through before leaving the aircraft checklist. (T-2)

6.24.6.2. During the propulsion system checks, follow normal flight manual procedures and limitations (do not combine maintenance procedures/limitations into the checks). Set power as requested and relay instrument readings, but limit troubleshooting to the scope of the aircraft flight manual. Checks requiring Functional Check Flight (FCF) procedures will be performed by FCF-qualified crews. (T-2)

6.24.6.3. When conducting propulsion system checks in areas of reduced traction, ensure all personnel on board are seated with lap belts fastened. (T-2)

6.24.7. Towing. Aircrew members will not normally participate in towing operations. The PIC will coordinate with the senior maintenance officer or superintendent to ensure the towing supervisor and crew are qualified. At non-USAF installations, the PIC must have approval from the airfield operations officer or manager prior to towing. The PIC will ensure the tow team supervisor briefs all personnel on their duties and the associated hazards. Proper checklists will be used. If any doubt exists as to the qualification of tow team personnel or the safety of the operation, make no attempt to tow the aircraft until qualified Air Force personnel can be located. Under no circumstances will any crew member act as the towing supervisor. (T-2)

6.24.8. When thunderstorms are reported within 10 nm of the airfield, only operations leading to an immediate engine start and departure may continue. However, personnel must be prepared to cease all activities in the event lightning within 5 nm is declared. When advised of lightning within 5 nm of the airfield, all flightline activities will cease and personnel will seek shelter. Unless an immediate takeoff is a safer course of action, taxiing aircraft will return to parking. (T-2)

6.24.8.1. Munitions loading will not be initiated, unless it can be completed before lightning becomes a hazard. If munitions loading has begun and lightning becomes a hazard, the crew will cease loading and depart the flightline/hot cargo area. Ensure that the Command Post notifies security forces that there will be an unattended aircraft with munitions. Unless immediate takeoff is a safer course of action, any taxiing aircraft with munitions aboard will return to hot cargo area or other approved parking location if lightning is declared within 5 nm. (T-2)

6.24.8.2. Aircraft taxiing to parking or hot cargo area when lightning is declared within 5 nm should not expect a marshaller. The aircrew will hold in place or proceed to parking if clearance is assured. Seek shelter or remain in the aircraft if safer. Time permitting, coordinate with Base Operations (Pilot to Dispatcher frequency) if the aircraft will be parked in any location other than one assigned by the Air Mobility Control Center (Maintenance Operations Control Center) through the Command Post. (T-2)

6.25. Aircrew Flight Equipment and Oxygen Requirements.

6.25.1. Helmets. Wear helmets during contingency and combat missions. The PIC may waive this requirement for specific crew members when mission requirements dictate. (T-2)

Note: Crew members will make available their personal helmet and oxygen mask to an Aircrew Flight Equipment (AFE) facility for cleaning, maintenance, and communications testing every 30 days. (T-2)

6.25.1.1. All personnel aft of flight station (FS) 245 will wear flight helmets while any gun is configured for live fire operations. Observers authorized to be on board during live fire operations will wear flight helmets or similar government issued protective headgear while any gun is configured for live fire. AGs will wear flight helmets while performing CLT installation/removal procedures in-flight and during any pyrotechnic deliveries. (T-2)

6.25.1.2. When conditions require personnel in the cargo compartment to wear the flight helmet, the chinstrap will be fastened. When performing duties near an open door/hatch in-flight the helmet visor will be lowered or other adequate eye protection worn. (T-2)

6.25.2. Oxygen. Oxygen on board for takeoff must be sufficient to accomplish the planned mission (minimum 10 liters). (T-2)

6.25.2.1. Crew members will accomplish a communications and operations check of their oxygen system prior to flight, which will remain connected and readily available when members occupy a primary crew position. Walk around bottles do not satisfy this requirement IAW AFI 11-202, Vol 3. (T-2)

6.25.2.2. When quick-don oxygen masks are installed, they will be preflighted (to include communications hook up) if they are used as the primary oxygen source. If the helmet and oxygen mask is the primary oxygen source throughout the flight, the quick-don mask is not required to be preflighted or hooked up. (T-2)

6.25.2.3. MA-1 Portable Oxygen Bottles.

6.25.2.3.1. If oxygen is required for crew members to transition to/from the flight deck and cargo compartment, do not re-position the portable oxygen bottles located at the pilot station, CP station, FS 245 left side, or the bottle forward of the right paratroop door. If no other portable oxygen bottles are on-board, additional bottles may be requested from maintenance personnel. (T-2)

6.25.2.4. Crew members who do not have access to the aircraft oxygen system will have an oxygen source Emergency Escape Breathing Device/Protective Breathing Device (EEBD/PBE) or Emergency Passenger Oxygen System (EPOS) available for flight and within arm's reach for pressurized flights above FL 250. Prior to flight, visually inspect the EEBD/PBE/EPOS to ensure it contains an adequate supply of oxygen. Passengers and other non-crew members will have EPOS available for flights above FL 250. (T-2)

6.25.2.5. Comply with AFI 11-202, Vol 3 for high-altitude and pre-breathing requirements. (T-2)

6.25.2.6. Decompression Sickness (DCS). For anyone thought to have symptoms of DCS, the following actions apply: (T-2)

6.25.2.6.1. As mission permits, declare an in-flight emergency, descend to as low a cabin altitude as practical, and land at the nearest suitable installation where medical

assistance can be obtained. Clearly indicate the possibility of DCS so that medical personnel will be best prepared to treat affected individuals. (T-2)

6.25.2.6.2. Keep the person relaxed and as warm as possible and watch for potential symptoms in other crew members for the next 24 hours. (T-2)

6.25.3. Parachutes. All AC-130W aircraft will be configured with one parachute for each crew member. Each crew member will fit a parachute and have it readily available prior to all weapons delivery, combat, contingency and FCF missions. Units will dictate use of parachutes during acceptance flights. (T-2)

6.25.4. Restraint Harness. Personnel performing in-flight duties near an open door will wear a parachute or restraining harness. Wear a restraining harness during all open door operations below 1,000 ft AGL. Fit the restraint harness and adjust the lifeline prior to stations time. Note: Connect the hook to a point that will preclude the wearer from exiting the aircraft. Connect the lifeline when at or anticipating moving aft of flight station (FS) 677. (T-2) **WARNING:** Position one restraint harness forward and aft of FS 245 in event the crew entrance door must be inspected during flight. (T-2)

6.25.5. Survival Kits/Vests.

6.25.5.1. All AC-130W aircraft will be configured with one survival kit (ML-4) for each aircrew member. Survival vests may be used in lieu of survival kits if the mission will not take them beyond gliding distance of land. (T-2)

6.25.5.2. All crew members will have individual survival vests readily available, and should wear them to the maximum extent possible, during combat and contingency missions. The PIC will determine minimum wear requirements based on threat assessment, mission, and crew considerations. (T-2)

6.25.6. Rafts. Ensure sufficient wing well life rafts are on board to accommodate all personnel on overwater flights. (T-2)

6.25.7. Life Preserver Unit (LPU):

6.25.7.1. Ensure sufficient quantities of life preservers are on board for all personnel for overwater flights. While overwater, LPUs will be sized and available at the crew member's station, and worn whenever below 2,000 ft overwater (except for takeoff and landing). (T-2)

6.25.7.2. If overwater and the mission requires wear of the parachute, the LPU will also be worn. (T-2)

6.25.8. Anti-exposure suits. Anti-exposure suits will be available during overwater flights when route of flight is beyond power off gliding distance from land and the water temperature is 60° Fahrenheit (F) or below. (T-2) **Exception:** Anti-exposure suits are not required when only the approach or departure is flown overwater). If the water temperature ranges between 51° F and 60° F, the unit or mission commander may waive or extend the anti-exposure suit requirement after carefully considering the following factors:

6.25.8.1. Climate zone and existing weather throughout range of flights.

6.25.8.2. Operational requirements.

6.25.8.3. Number and type of aircraft in formation.

6.25.8.4. Time of flight overwater.

6.25.8.5. Risk, based on aircraft load and mission configuration.

6.25.8.6. Degree of surveillance over mission.

6.25.8.7. Location, availability, and capability of SAR forces (consider anticipated time in the water prior to pick-up).

6.25.8.8. Winds and wave height and their impact on SAR.

6.25.8.9. Altitude and distance from land.

6.26. Aircrew Flight Equipment Documentation. AFE personnel will accomplish a thorough aircraft preflight inspection prior to each mission. Local training missions only require a preflight inspection prior to the first flight of the day. (T-2)

6.26.1. The PIC or designated representative will ensure appropriate serviceable protective clothing, AFE, survival equipment, and Dash 21 equipment for the entire mission are available prior to flight and all personnel are briefed or trained in their use prior to departing home station. (T-2)

6.26.1.1. Prior to departing home station and following en route crew changes, the PIC or designated representative will review the AFTO Form 46, Prepositioned Life Support Equipment, to ensure all required equipment is on board and required inspections have been completed. (T-2)

6.26.1.2. The PIC or designated crew member will document and ensure missing AFE is annotated in both the AFTO Form 781A and AFTO Form 46. (T-2)

6.27. IFF/SIF Operations.

6.27.1. Aircraft will not depart with an inoperative IFF/SIF without the approval of ATC and the PIC. (T-2) **Exception:** Formations must have at least one operational IFF/SIF per element.

6.27.2. Perform a ground check of the IFF/SIF before takeoff, using either the self-test or ground radar interrogation. (T-2)

6.27.2.1. If self-test is unacceptable and radar facilities do not permit ground check, takeoff is authorized if the IFF/SIF was operational on the previous mission. Accomplish an airborne check immediately after takeoff. (T-2)

6.27.3. Use the IFF/SIF IAW **Table 6.4.** (T-2) **Note:** IFF/SIF mode 1, 2, and 3/A coded, once set and transmitted are unclassified and may be left in the transponder.

Table 6.4. Worldwide IFF Chart.

IFF Mode	NATO	LANTCOM and NOPAC	All other areas
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1	IAW Allied Communications Publication (ACP) 160, USAFER 60-17, NATO directives, Special Instructions (SPINS)/ATO	IAW ACP 160, US Sup-1(C), NI 10-41, NI 10-15, NR 55-68, NR 55-2, SPINS/ATO	
2	IAW ACP 160, USAFER 60-17, NATO directives, SPINS/ATO	IAW ACP 160, US Sup-1(C), and ANNEX A, SPINS/ATO	
3	As directed by ATC, SPINS/ATO	As directed by ATC, SPINS/ATO	As directed by ATC, otherwise IAW ACP 160, US Sup-1(C)
4	Keyed and On		
Note: Mode 4 is not required within CONUS unless ADIZ penetration is anticipated.			
Note: Carry a crypto key loader for use in the event of rerouting or diversion, except on local training missions.			

6.27.4. Mode 4. Conduct an in-flight check of the Mode 4 after takeoff where facilities are available. Do not delay takeoff nor cancel a mission for an inoperable Mode 4. (T-2)
Exception: Aircrews will ensure they have an operable Mode 4 prior to departure if the aircraft will transit an area where safe passage procedures are implemented or when required for mission accomplishment. (T-2)

6.27.5. Mode S. Mode S equipped aircraft have the capability of assigning a unique default code that is associated with a specific aircraft registration as well as the flight identification that corresponds to the filed flight plan call sign.

6.27.5.1. Military aircraft have the ability to change the Mode S and Flight ID codes. Erroneous Mode S codes and/or Flight ID mismatch to filed aircraft identification degrade the safety and efficiency of air traffic control. Inadvertent duplication of an address will seriously degrade or even disable ETCAS operability.

6.27.5.2. Aircrew and squadron operations staff must ensure that the assigned/unique Mode S address (default code) be loaded in to the transponder correctly. Flight plan filed call signs must match exactly to the Flight ID inserted into the transponder. There will be neither leading zeros nor spaces/dashes ahead of or between the characters entered in the Flight ID. If the call sign is less than 7 characters, the inserted Flight ID will have spaces only at the end. This procedure is IAW DoD FLIP General Planning. (T-2)

6.27.5.3. Ensure Mode S operation is IAW the aircraft flight manual. Due to its importance, anytime a Mode S code is entered, it will be verified by a second crew member. (T-2)

6.28. Cargo Documentation.

6.28.1. AC-130W aircraft do not normally transport cargo through normal AMC channels. If tasked to do so, ensure proper cargo documentation accompanies each load when possible. Proper cargo documentation should include a load plan, cargo manifest, and any special handling documentation (i.e., registered mail, perishable cargo). Additionally all hazardous cargo will be accompanied by a Declaration for Dangerous Goods IAW AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipment*. (T-2)

6.29. Dropped Object Prevention. During aircraft exterior visual inspections, pay particular attention to surfaces, panels, and components which could potentially be dropped objects. If a dropped object is discovered and the mission is continued, the flight crew will: (T-2)

6.29.1. Ensure the write-up is entered in the AFTO Form 781A.

6.29.2. Notify the AFSOC Command Center as soon as practical. Include route of flight, altitude, and weather (i.e., turbulence, etc.).

6.30. Narcotics. Crew members will ensure narcotics and other unauthorized items are not smuggled on board the aircraft. (T-2)

6.31. Flight Deck Congestion and Loose Objects.

6.31.1. Limit the number of persons on the flight deck to the minimum commensurate with mission requirements. At no time will the number of persons on the flight deck exceed 9. (T-2)

6.31.2. Keep the flight deck area uncluttered and orderly for all flight and ground operations. Specifically: (T-2)

6.31.2.1. Do not place any item (checklist, chart, etc.) on the center pedestal in a position that covers or hides from view any switch, light, or gauge. Do not place any item behind condition levers or on the throttle quadrant.

6.31.2.2. Do not store on the flight deck any items not required for use or immediate reference in-flight.

6.32. Passenger Policy. DoD 4515.13-R, *Air Transportation Eligibility*, establishes criteria for passenger movement on DoD aircraft. It defines five categories of passenger travel: space available, aero medical evacuation, orientation, and space-required. AFI 11-401 provides further guidance on orientation. Refer to these publications directly for details not addressed in this instruction. In all cases, individuals will be manifested on a Passenger Manifest (i.e., DD Form 2131). (T-2)

6.32.1. Space-available. AC-130Ws will not be used for space available travel. (T-2)

6.32.2. Aeromedical Evacuation. Defined as the movement of patients by air. Specific guidance on eligibility and documentation is contained in DoD 4515.13-R. Commander, United States Transportation Command is the single manager for policy and procedure.

6.32.2.1. Restrictions. If tasked to conduct aero medical evacuation, both pilots must be fully qualified. AAR may be performed if required for mission accomplishment after coordination with tasking authority. All other mission events and simulated Emergency Procedures (EP)s are prohibited. (T-2)

6.32.3. Orientation. AFI 11-401 contains specific details on the Air Force Orientation Flight Program. Document authorization by letter and manifest on an AF Form 96. Requests for approval will include the mission profile and mission events to be accomplished. Forward requests through stan/eval channels. Report annual orientation activity IAW AFI 11-401 and AFSOC Sup. (T-2)

6.32.3.1. Restrictions.

6.32.3.1.1. For spouse orientation, comply with restrictions in AFI 11-401 and AFSOC Sup. Additionally, AAR and threat maneuvers are prohibited. (T-2)

6.32.3.1.2. For other orientation categories, both pilots must be fully qualified (does not apply to special qualification events not planned for the flight). AAR may be approved on a case by case basis by Group CCs or COMAFSOF. Simulated EPs are prohibited. All other mission events may be conducted as approved by approval authority. Passengers will be seated with belts fastened during threat maneuvers. (T-2)

6.32.4. Public Affairs Travel. Defined as travel in the interest of adding to the public understanding of DoD activities. AFI 11-401 contains specific details on the Air Force Public Affairs Flight Program. Document authorization by letter and manifest on a DD Form 2131. Requests for approval will include the mission profile and mission events to be accomplished. Forward requests through public affairs channels. (T-2)

6.32.4.1. Restrictions. Both pilots must be fully qualified in all sortie events. AAR may be approved on a case by case basis by Group CCs or COMAFSOF. Simulated EPs are prohibited. All other mission events may be conducted as approved by approval authority. Passengers will be seated with belts fastened during threat maneuvers. (T-2)

6.32.5. Space-required. DoD 4515.13-R lists several categories of passengers, not previously mentioned, who are authorized official travel on DoD aircraft. Apply space-available processing, approval, and restrictions from **Paragraphs 6.25.1** and **6.25.1.1** above to all space required categories with the following exceptions:

6.32.5.1. Supported forces. A subcategory of space-required passenger defined by this instruction as US and foreign military personnel who are an integral part of the mission being performed. Approval is assumed by the mission tasking. Manifest on a DD Form 2131. Supported forces will not normally be transported on AC-130s. Group CCs or COMAFSOF may authorize supported forces on AC-130s on a case-by-case basis. (T-3)

6.32.5.1.1. Restrictions. Both pilots must be fully qualified unless excepted by AFI 11-401. Simulated EPs are prohibited. There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. PICs will ensure that supported forces are briefed on the mission profile and events before flight. (T-2)

6.32.5.2. Supporting forces. A subcategory of space-required passenger defined by this instruction as US and foreign military, DoD civilians, and US civilian employees under contract to the DoD, who directly support the mission or a deployment of an AFSOC unit. This may include, but is not limited to; maintenance, communications, intelligence, logistics, fuels, and flight test personnel, unit-supporting chaplains, civilian contractors

required for in-flight checks or deployment support, Federal Aviation Administration (FAA) representatives, STS, fire support officers, and other military personnel who are on board to communicate/coordinate with ground forces. Off-station travel is documented by travel orders. Flights will be documented by letter of authorization from the Group CC or COMAFSOF. Squadron Commanders may approve squadron assigned personnel or maintenance personnel required for mission accomplishment. 18 Flight Test Squadron/CC is the approval authority for supporting forces in conjunction with test missions. When frequent local flights are necessary, commanders may issue annual authorizations by name or Air Force Specialty Code as appropriate. When using this option, PICs will ensure that all restrictions in the following paragraph are complied with for each individual mission. Manifest all supporting forces on a DD Form 2131. (T-2)

6.32.5.2.1. Restrictions. Both pilots must be fully qualified unless excepted by AFI 11-401. Simulated EPs are prohibited. There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. PICs will ensure that supporting forces are briefed on the mission profile and mission events before flight. (T-2) **Exception:** EPs required for the purposes of a FCF are authorized. Limit personnel to absolute minimum required. (T-2)

6.33. Military Customs Preclearance Inspection Program.

6.33.1. The military customs program was developed to assist the DoD and other US Government agencies in the control of narcotics, contraband, and prohibited agricultural products, and to expedite entry of DoD personnel and material into the customs territory of the United States.

6.33.2. Military Customs Inspectors will accomplish this inspection immediately prior to departure and may conduct more than one pre-clearance inspection on CONUS bound aircraft. When security considerations necessitate deviation from this policy, mission planners must coordinate with the appropriate agency to ensure the mission is not jeopardized. (T-2)

Section 6F—Departure

6.34. Engine Run-Up/Propulsion Checks.

6.34.1. An engine propulsion check may be performed anytime the crew deems necessary. If 95% engine efficiency cannot be obtained on all engines, the aircraft will not be flown. Accomplish the check IAW the specific flight manual. (T-2)

6.34.1.1. Request clearance from the ground or tower controller prior to an engine propulsion check. Advise controller when prop wash will cross the runway. (T-2)

6.34.1.1.1. Comply with the guidance in the flight manual and AFI 11-218 for engine run-up/propulsion system procedures. (T-2)

6.34.1.1.2. At no time will an engine run-up be attempted (throttles out of the ground range) unless the aircraft is in an approved engine run-up site (per Base Operations/Fixed Base Operator) or the active runway. (T-2) **Note:** ATC clearance does not constitute a safe environment for an engine run-up. (T-2)

6.34.1.1.3. Using the MDS flight manual danger areas figure, ensure the area behind the aircraft is clear before starting an engine run-up. (T-2) **WARNING:** Prop blast from engine run-ups/propulsion systems checks is hazardous to people, buildings, equipment, and other aircraft.

6.34.1.1.4. If an engine run-up/propulsion systems check was not accomplished, the first takeoff of the day will be static to allow for an engine efficiency check. (T-2)

6.34.2. The propeller static feather check procedure is normally considered a periodic maintenance function; however, if the FE elects to perform this procedure, ensure engine oil temperature is 20° C or greater. (T-2)

6.35. Ground Collision Avoidance System Operation. Operate the GCAS in the normal mode (Audio On and Visual On) for all non-tactical operations. Crews may override the flap/glide slope advisory during the approach to landing as long as the alert is acknowledged by both pilots. (T-2)

6.36. Traffic Collision Avoidance System TCAS/ETCAS Operations. Use the above/below/normal settings as appropriate for the phase of flight and mission. The “below” setting should be used for tactical descents. (T-2)

6.37. Power Application. To help prevent over-torque, the FE will make a call over the interphone any time torque reaches 17,000 in-lb. Pilots and FEs will monitor torque as throttles are advanced. (T-2) **CAUTION:** The M2 sensor will be stowed for takeoff. It can be returned to normal operation when airborne. (T-2)

6.38. Departure Monitoring. The PM and Navigator (NAV) will back up the pilot and report any deviations from the planned departure. When radar facilities are available, departures will be radar monitored to the maximum extent possible. (T-2)

6.39. Flight Progress. Use all available navigational aids to maintain course centerline and positive fixing of the aircraft’s position. (T-2)

6.40. Navigation Aid Capability. Refer to [Chapter 4](#) for minimum navigation capabilities.

6.40.1. North Atlantic Region and the US West Coast/Hawaii Route System. Aircraft must have an operable INS/GPS/Self-Contained Navigation System (SCNS) prior to airspace/track entry. Aircraft without this equipment must return to a station with maintenance capability or re-file via routes specified in FLIP. (T-2)

6.40.2. North Pacific (NOPAC) Region. Comply with the following procedures when transiting the Anchorage/Tokyo Oceanic Control Area/Flight Information Region (FIR) on the NOPAC north route: (T-2)

6.40.2.1. Westbound aircraft on the NOPAC north route experiencing loss of radar capability at any point shall, fuel permitting, refile a flight plan on another track or return to the nearest facility with radar maintenance capability. (T-2)

6.40.2.2. Westbound aircraft on the NOPAC north route that have a single drift and groundspeed source and experience loss of that source at any point, may continue the NOPAC north route if the radar system is fully operable. Verify in-flight that satisfactory returns are being received on all ranges, particularly the longer ranges (100 nm or

greater). If the radar system is marginal or inoperative, fuel permitting, refile a flight plan to another track or return to the nearest facility with maintenance capability. (T-2)

6.41. Communications Instructions Reporting Vital Intelligence Sightings and Other Reports. Refer to AFI 10-206, *Operational Reporting*. Report all vital intelligence sightings from aircraft as indicated in the FLIP Planning or FIH. (T-2)

6.42. In-Flight Meals. The P and CP will not consume meals within 90 minutes of each other, before or during flight, if the meals were procured from the same vendor and consist of the same menu. (T-2)

6.43. In-Flight Emergency Procedures. Report deviations from directives that occur as a result of an emergency IAW AFI 11-202, Vol 3 and this instruction. (T2)

6.43.1. Notification of Controlling Agencies. As soon as practical after completing the aircraft emergency action checklist, furnish the controlling agency and appropriate command, control, and communications (C3) a description and extent of the difficulty, assistance required, intentions, and any further pertinent information. (T-2)

6.43.2. Emergency Landing. Aircrews must be prepared to divert to the nearest suitable airfield. The NAV (PM if the NAV is unable to return to the flight deck) must be ready to provide pertinent information including headings, distance, and frequencies. (T-2)

6.43.3. Conference HOTEL. Lockheed Martin's In-flight Conference HOTEL personnel can be contacted by calling the Warner Robins Air Logistics Center Command Post at the phone numbers listed in **Table 6.5**. They are manned 24 hrs/day and are tasked with arranging contact between operational units and appropriate WR-ALC Personnel, including management level as well as technical. Before requesting a Conference HOTEL through CP, first seek recommendations from local OG/OGV and/or HQ AFSOC/A3V. (T-2)

Table 6.5. Conference HOTEL Phone List.

Time	Procedure	Contact	POCs:
24 hours:	Call Lockheed Martin Technical Representative:	DSN: 625-9001 or Comm (770) 494-1705	Steve Horbath Mark Neas Wayne Roberts
Non-duty hours:	Call Robins Command Post and ask for home phone numbers for above personnel. Robins Command Post will maintain a current listing of home telephone numbers for POCs.	DSN: 497-2612/13 or Comm (478) 327-2612/ 13	

6.43.3.1. The PIC may initiate the conference when additional expertise is necessary to cope with emergencies or other conditions. It convenes at the lowest level where expertise is available, and will not be elevated for the purpose of keeping the next higher echelon informed.

6.43.3.2. Technical Assistance Service. The PIC may request (at anytime in the decision process) technical support and additional assistance from their home unit, MAJCOM staff, maintenance representatives, and/or civilian contractor support.

6.43.3.3. When in UHF or VHF range, initiate the conference over appropriate discrete frequencies. When out of VHF or UHF range, use HF radios to establish a phone patch with the nearest or controlling C3. Provide a narrative description of the situation including actions taken, intentions, and type of expertise desired. (T-2)

6.43.4. Turnaround Procedures. Use procedures IAW FLIP. (T-2)

6.43.5. Continued Flight with Engine Loss. A flight may proceed on three engines to its destination if two-engine capability exists, favorable operating conditions prevail both en route and at the point of intended landing, and a suitable alternate airfield is available at all times. If these conditions cannot be met, the flight will terminate at the nearest facility (preferably military) which, in the judgment of the PIC, offers safe and favorable operating conditions. (T2)

6.43.6. Fuel Jettisoning. Fuel will not be jettisoned except for combat conditions, emergency conditions, or rescue missions requiring gross weight reduction. (T-2)

6.43.6.1. Advise ATC should it become necessary to jettison fuel. (T-2)

6.44. Medical Assistance. When a person on board the aircraft requires medical care the PIC will inform the station of next intended landing in sufficient time so medical personnel may meet the aircraft. The request will include the individual's sex, approximate age, and the nature of the medical problem. (T-2)

6.44.1. Suspected Laser Exposure. If exposed to a laser, the PIC will ensure appropriate command and control, intelligence, safety, and medical agencies are notified as soon as possible. Aircrew who suspect exposure to laser radiation from either friendly or hostile sources should report to the Flight Surgeon's Office or nearest emergency room where individual can be examined by an ophthalmologist immediately upon landing. (T-2)

Section 6G—Arrival

6.45. Crew Coordination. The PF the approach will brief the crew on the descent, approach, and landing IAW the flight manual and/or SOG/OGV approved briefing guides. The PM and NAV will monitor the approach and report any deviations from prescribed procedures. (T-2)

6.46. Flight Instrumentation Requirements and Procedures.

6.46.1. Flight Instrumentation Requirements. If full flight instrumentation is not available and operational, aircraft are limited to a DA or MDA based on a HAT of 300 ft and RVR 40, or $\frac{3}{4}$ mile visibility (1,220 meters) with no RVR. (T-2)

6.46.1.1. Full flight instrumentation for a Category (CAT) I ILS consists of: dual flight displays, complete differential pressure instruments, heading/compass systems, and attitude direction indicators (ADI) in the P and CP positions. (T-2)

6.46.1.2. Full flight instrumentation for a precision approach radar (PAR) consists of: complete differential pressure instruments, heading/compass systems, and ADIs in the P and CP positions. (T-2)

6.47. After Beginning an En Route Descent. IAW AFI 11-202, Vol 3 after starting an en route descent and the weather is reported or observed to be below approach minimums, the PIC has the option of continuing the approach to the MAP/DH. Comply with the last assigned clearance until a new or amended clearance is received. (T-2)

6.48. Coupled Approach Procedures. When a coupled approach is flown, assume manual control at or above published MDA or DH. (T-2)

6.49. Self-Contained Approaches (SCA). Instrument Meteorological Conditions (IMC) SCAs are operational procedures not normally intended for publication in FLIP.

6.49.1. All IMC SCAs must conform to the criteria specified in AFI 11-230, *Instrument Procedures*, and be approved through stan/eval channels by the HQ AFSOC/A3. Refer to SCA construction guidelines in **Chapter 11** of this volume and SCA procedures in **Chapter 15** of this volume. (T-2)

6.50. Radar Altimeter Procedures. Set the radar altimeters to the HAT or height above aerodrome for the approach being flown in accordance with the flight manual. Pilots and NAVs will crosscheck radar altimeters during descent to ensure adequate terrain clearance is provided throughout the descent and maneuvering portion of the approach. Once established in a VFR traffic pattern, the radar altimeter may be set at the discretion of the pilot. (T-2)

6.51. Wake Turbulence Avoidance. Pilots must exercise the discipline necessary to ensure wake turbulence avoidance criteria are observed during flight operations. Acceptance of a visual or contact approach clearance, or instructions to follow an aircraft, is acknowledgment that the pilot will maintain a safe interval for wake turbulence avoidance. The following instructions expand wake turbulence avoidance criteria, but do not replace guidance in DoD FLIP planning (General Planning **Chapter 5**). (T-2)

6.51.1. For VFR traffic patterns behind heavy jets follow the “Vortex Avoidance Procedures” in FLIP General Planning. (T-2)

6.51.2. Low approaches behind heavy jets will be flown no lower than that altitude which ensures the aircraft remains well above the flight path of the heavy jet. (T-2)

6.51.3. Pilots operating under IFR into US civil airports will request 5 miles separation under radar control or 2 minutes non-radar control from heavy jets (departure and arrival). (T-2)

Section 6H—Postflight

6.52. Impoundment. If an aircraft is involved in a serious incident, the PIC should impound the aircraft immediately and contact the AFSOC Command Center or controlling agency for further instructions.

6.52.1. Impoundment is the isolation or control of access to an aircraft or equipment item and applicable historical records so an intensified investigation can be completed.

6.52.2. If required, impound the aircraft IAW AFI 21-101, *Aircraft and Equipment Maintenance Management*, **Chapter 9**. (T-2)

Section 6I—Debriefing

6.53. Maintenance. The PIC and the FE ensure crew members complete the AFTO Form 781. (T-2)

6.53.1. Immediately after arrival, the PIC and any crew position documenting a maintenance discrepancy will debrief maintenance personnel on the status of the aircraft and subsystems and discrepancies entered into the AFTO Form 781A document. At stations where there is no AFSOC maintenance and maintenance support is required, the PIC will ensure a thorough debrief is provided to the controlling CCC prior to entering crew rest. (T-2)

6.53.2. Aircrews will complete the AFTO Form 781A as needed. The PIC will review the aircraft forms, determine those discrepancies considered as mission essential and may indicate them by entering 'ME' in block letters in the lower left hand corner of the AFTO Form 781A discrepancy block. Use 'MC' (mission contributing) to indicate any discrepancies that, if not corrected, would substantially affect mission accomplishment, but are not mission essential. (T2)

6.53.3. Use Block 14 (discrepancy) of the AFTO Form 350, *Repairable Item Processing Tag*, with an AFTO Form 781 entry to identify and tag any defective item of equipment such as headsets, thermos jugs, etc. (T-2)

6.53.4. Ensure flight time, landings, aircraft condition, and fuel unloaded/offloaded during refueling operations is entered in the AFTO Form 781H. (T-2)

6.53.5. Enter "Aircraft subjected to salt spray" on the AFTO Form 781A any time the aircraft is flown under 3,000 ft AGL over salt water, excluding takeoffs and landings. (T-2)

6.53.5.1. Bird Bath procedures. AC-130W will not use the bird bath due to water intrusion problems with AC-130W Large Aircraft Infrared Countermeasures (LAIRCM) Small Laser Turret Assemblies (SLTA). (T-2)

6.54. Debriefing. The PIC or a designated representative will pass significant information to support agencies, such as weather, ATC, or base operations. Debrief intelligence when applicable. The PIC will conduct a crew debriefing after each mission. The debriefing will include all applicable crew members so that common problems can be discussed and resolved. Crew members may be excused from the debrief at the discretion of the PIC. (T-2)

6.55. Aircrew Notification Procedures. When transiting installations, the PIC will establish a point of contact with the local command post, local base operations, or local airport manager. The PIC will be notified immediately in case of incident or emergency affecting the safety or security of the aircraft. (T-2)

Section 6J—Miscellaneous Procedures

6.56. Customs, Immigration, and Agriculture Inspections.

6.56.1. Obtain Customs, Agriculture, and Public Health clearance, as required, prior to opening any doors, hatches, or windows, other than the crew entrance door, or enplaning and deplaning personnel. (T-2)

6.56.2. Proceed directly from the aircraft to Customs, Immigration, or Agricultural inspection for processing when required by the inspector. (T-2)

6.56.3. US military aircraft are sovereign. When cleared to over-fly or land in foreign territory, it is US policy to assert that military aircraft are entitled to the privileges and immunities which customarily are accorded warships. These privileges and immunities include, in the absence of stipulations to the contrary, exemption from duties and taxation; immunity from search, seizure, and inspections (including customs and safety inspections); or other exercise of jurisdiction by the host nation over the aircraft, personnel, equipment, or cargo on board. USAF PICs will not authorize search, seizure, inspection, or similar exercises of jurisdiction enumerated above by foreign authorities except by direction of HQ USAF or the American Embassy in the country concerned. (T-2)

6.56.3.1. The PIC will not permit the inspection of their aircraft by officials of any foreign government. If requested to do so, the PIC and crew will deny access and seek aid from the senior AFSOC or other USAF representative, US Embassy, or consulate within the host nation. Customs or other officials will be informed of the above policy and requested to confirm their request through their own government and with US Department of State representatives. If necessary the aircraft will be sealed by the crew and the crew entered into crew rest and departure intentions will be canceled until resolution of the matter by appropriate authority. Inform command and control authorities by the fastest available means should this situation occur. When confronted with a search request by foreign authorities, aircrews should consider the following procedures: (T-2)

6.56.3.1.1. In most cases, search attempts may be stopped by a statement of the PIC to the foreign officials that the aircraft is sovereign and not subject to search without consent of HQ USAF or the chief of mission in the country concerned. This should be clearly conveyed in a polite manner so as not to offend foreign authorities who may honestly, but mistakenly, believe they have authority to search USAF aircraft.

6.56.3.1.2. If foreign authorities insist on conducting a search, the PIC must negotiate to delay the search until contact is made with HQ USAF/A3OOA or the appropriate embassy. The PIC should unequivocally state that they have no authority to consent to the search and that they must relay the foreign request to these agencies for decision. The PIC should then notify these agencies of the foreign request by the most expeditious means available. Thereafter, PICs should follow instructions provided by the appropriate embassy and HQ USAF.

6.56.3.1.3. If foreign officials refuse to desist in their search request, the PIC should indicate that they would prefer to fly the aircraft elsewhere (provided fuel and mechanical considerations permit a safe departure) and request permission to do so.

6.56.3.1.4. If permission is refused and the foreign authorities insist on forcing their way on board an aircraft, the PIC should state that they protest the course of action being pursued and that they intend to notify both the appropriate American Embassy and HQ USAF of the foreign action. The PIC should then allow the foreign agents on board the aircraft, without physical resistance, and thereafter report the incident to HQ USAF and appropriate embassy as soon as possible.

6.56.3.1.5. In all instances, specific instructions may be briefed because of sensitive cargo or equipment. These instructions and applicable provisions of classified supplements to the foreign clearance guide should be followed where applicable.

6.57. Border Clearance.

6.57.1. Normal Operations:

6.57.1.1. Border Clearance Requirements. The requirements will be IAW the applicable Foreign Clearance Guide and AFI 24-203, *Preparation and Movement of Air Force Cargo*. (T-2)

6.57.1.2. PIC Responsibility. Border clearance is the responsibility of the PIC, although many of the duties have been assigned to ground personnel and to the AG. The PIC will ensure:

6.57.1.2.1. Crew members and passengers possess current passports and valid visas if required. (T-2)

6.57.1.2.2. Crew members and passengers have current shot records or certificates of immunization. (T-2)

6.57.1.2.3. Cargo entry documents are in proper order. (T-2)

6.57.1.2.4. Departure or arrival to the US is through an air base where border clearance can be obtained. (T-2)

6.57.1.2.5. Border clearance for aircraft cargo, passengers, crew and baggage, if required, is obtained before takeoff to a foreign area, or after arrival from a foreign area. (T-2)

6.57.1.2.6. En route to the US, the AG has distributed personal customs declarations to all passengers and crew members; has briefed passengers and crew members on customs regulations in accordance with **Chapter 13** of this instruction; and has prepared and compiled Customs Form (CF) 7507, *General Declaration (Outward/Inward)*, for the PIC's signature. (T-2)

6.57.1.2.7. En route to the US, the base of intended landing is notified of any change in ETA, to ensure border clearance is accomplished as soon as possible after landing. (T-2)

6.57.1.2.8. A Permit to Proceed is obtained when the mission requires an aircraft, which has landed in the US for customs clearance to proceed to another US base to obtain border clearance. The permit delays customs inspection of cargo, passengers, and crew until arrival at the offload station, saving intermediate offloading and reloading normally required for customs inspection. The Permit to Proceed is valid only to the airport of next landing, where the border clearance must be completed, or a new permit obtained. Do not make intermediate stops unless required by an emergency situation or directed by AFSOC. (T-2)

6.57.1.2.9. When an aircraft lands for a US border clearance, a US Customs representative normally meets the aircraft to obtain the required documents. Do not deplane passengers or crew members, except a scanner, unless necessary for safety. Do not unload until approved by customs and agriculture personnel or their designated representatives. This procedure applies to the initial landing in the US and all subsequent landings until crew, passengers, and cargo complete final border clearance. (T-2)

6.57.2. Exercise and Contingency Operations:

6.57.2.1. General. Certain missions, which do not transit normal ports of entry or exit, require special procedures to expedite compliance with customs, public health, immigration, and agricultural requirements. A joint memorandum of understanding establishes procedures and waivers.

6.57.2.2. Implementation. Traffic and border clearing agencies implement all or part of the agreement as necessary for each operation. Inspection and clearance may be accomplished at the CONUS onload or offload base instead of the normal air-point of entry, or at the foreign onload or offload base.

6.57.2.3. Customs Procedures.

6.57.2.3.1. Outbound. No requirement. Filing of CF 7507, *General Declaration (Outward/Inward)*, is waived.

6.57.2.3.2. Inbound. Prepare one copy of the following documents before arrival. (T-2)

6.57.2.3.2.1. CF 7507 (non-aircrew member list not required).

6.57.2.3.2.2. Cargo manifest.

6.57.2.3.2.3. For troops out of country less than 140 days:

6.57.2.3.2.3.1. Troop commander's certificate for examination of troop baggage.

6.57.2.3.2.3.2. One copy of US Customs Baggage Declaration Form for each passenger not under command of the troop commander, to include observers, support personnel, civilians, news reporters, and crew members.

6.57.2.3.2.3.3. Upon arrival at a CONUS offload base, a Customs representative meets the aircraft and accepts the troop commander's certificate with respect to troop baggage. Individual baggage declarations are not required. The troop commander should have inspected troop baggage. Troops debark under the observation of the Customs representative with only a spot check of articles and baggage. The Customs officer may elect to make a more extensive inspection.

6.57.2.3.2.4. For troops who are out of the country 140 days or more:

6.57.2.3.2.4.1. One copy of the US Customs Baggage Declaration Form for each passenger. This includes observers, support personnel, civilians, news media personnel, and crew members. Personnel may use DD Form 1854 or CF 6059B, *Customs Declaration*, when issued by the US Customs representative. See AFI 24-404, *Customs – Domestic*, for further guidance.

6.57.2.3.2.4.2. Upon arrival at a CONUS offload base, a Customs representative meets the aircraft and collects all declarations. Troops debark under the observation of the Customs representative who may make a discretionary examination of baggage.

6.57.2.4. Public Health Procedures:

6.57.2.4.1. The PIC ensures that all crew members and passengers are properly immunized. (T2)

6.57.2.4.2. Spray the aircraft, if required. (T-2)

6.57.2.5. Immigration Procedures:

6.57.2.5.1. Outbound. No requirements.

6.57.2.5.2. Inbound. Submit one copy of CF 7507 to the Immigration inspector. Refer to the Foreign Clearance Guide for any other required documents. (T-2)

6.58. Insect and Pest Control (Aircraft Spraying).

6.58.1. The PIC will ensure required spraying is accomplished when required by the Foreign Clearance Guide and certify the spraying on CF 7507, or on forms provided by the country transited. (T-2)

6.58.2. Use insecticide, Aerosol D-Phenotrin-2%, NSN 6840-01-067-6674 (or equivalent), to spray the aircraft. Aircraft should never be sprayed with passengers on board. The only exception is when mandated by the FCG. (T-2)

6.58.2.1. Aerosol normally is dispersed at a flow rate of 10 seconds per 1,000 cubic ft. Direct the nozzle toward the ceiling of the compartment or space being sprayed. Do not spray any plastic surface or allow the spray to wet it. (T-2)

6.58.2.2. Spray spaces inaccessible from within the aircraft after completely loading fuel, baggage, cargo, and passengers, including baggage compartments, wheel wells, and other similar spaces. (T-2) **CAUTION:** If the insecticide label directs disembarkation after use, spray prior to boarding crew or passengers. Close all doors and hatches for 10 minutes after dispensing and ventilate for 15 minutes before allowing anyone on board. (T-2)

6.58.3. Spray for 50 seconds unless longer periods are specified for the country being transited. (T-2)

6.58.4. When the crew discovers insect or rodent infestation of the aircraft while in-flight, notify the destination C3, base operations, or airport manager of the situation before landing so the proper authorities can meet the aircraft. (T-2)

6.58.5. Upon arrival, do not open cargo doors or hatches except to enplane officials required to inspect the aircraft for insect or rodent infestation. Do not onload or offload until the inspection is satisfactorily completed. This procedure may be altered to satisfy mission or local requirements, as arranged by the base air terminal manager. (T-2)

6.59. “Due Regard” Procedures. When a unit commander authorizes a mission to be flown in international airspace over the high seas and in-flight operational requirements conflict with International Civil Aviation Organization (ICAO) rules and procedures, the PIC may make the decision to proceed using “due regard” procedures, IAW FLIP General Planning and AFI 11202, Vol 3.

6.60. Hazardous Material Procedures. The term “hazardous material” as used in conjunction with airlift operations applies to the following classes and types of materials covered by Air Force Joint Instruction (AFJI) 11-204, *Operational Procedures for Aircraft Carrying Hazardous*

Materials, and includes any material which, because of its quantity, properties, or packaging, may endanger human life or property. Procedures in this paragraph apply whenever aircraft carry DoD Hazard Class/Division 1.1, 1.2, or 1.3 explosives, Department of Transportation (DOT) Class A and B poisons, etiological or biological research materials, radioactive materials requiring yellow III labels, and inert devices. Also included are DoD Hazard Class/Division 1.4 explosives, oxidizers, compressed gases, flammable solids and liquids, and corrosive liquids listed in AFMAN 24-204.

6.60.1. Briefing. Reference AFMAN 24-204. (T-2)

6.60.2. Cargo Documentation. Do not accept hazardous materials unless proper documentation, certification, and identification of cargo are provided. This includes transportation control number entered correctly on both the cargo manifest and the Shipper's Declaration for Dangerous Goods. (T-2)

6.60.2.1. Shipper's Declaration for Dangerous Goods prepared by the shipper in accordance with AFMAN 24-204 and AF Form 127, *Traffic Transfer Receipt*, will accompany the manifest, if required. (T-2)

6.60.3. Flight Planning. The PIC (unless specifically briefed otherwise):

6.60.3.1. Enters "Hazardous Cargo" and the mission number in the appropriate section of the flight plan. Use remarks section of DD Form 175, *Military Flight Plan*, and other information section of DD Form 1801, *DoD International Flight Plan*. (T-2)

6.60.3.2. Plans the flight to minimize over flying heavily populated or otherwise critical areas. (T-2)

6.60.3.3. Prepares a departure message. (T-2) The remarks section of the departure message should include the following:

6.60.3.3.1. DoT class and DoD hazard class or division, if applicable, of hazardous material on board (include net weight of DoT Class A or B poisons and net explosive weight (NEW) of Class A or B explosives).

6.60.3.3.2. Request for special support; e.g., isolated parking, security, technical escort teams, etc.

6.60.3.3.3. Inert devices (when applicable).

6.60.3.4. If Estimated Time En route (ETE) is less than 1 hour, or if other circumstances preclude timely receipt at destination, notify base operations at the first intended landing by priority telephone of the ETA and information listed in **Paragraph 6.60.3.3**. (T-2)

6.60.4. Before Engine Start. Ensure placards are removed. Give the controlling agency parking location, approximate engine start time, and verify that the fire-fighting agency has the hazardous materials information. If not, request the following be relayed to the fire-fighting agency: (T-2)

6.60.4.1. DoT class of hazardous material on board and the DoD hazard class or division for explosive material on board.

6.60.4.2. Net Explosive Weight.

6.60.4.3. Request for isolated taxiing (if necessary).

6.60.4.4. Estimated Time of Departure (ETD).

6.60.5. En Route. Normal procedures apply. Avoid flying over metropolitan or otherwise critical areas. (T-2)

6.60.6. Before Landing. Accomplish the following unless specifically prohibited by the theater commander or FLIP planning. (T-2)

6.60.6.1. Contact the base operations dispatcher, control tower, approach control, or other agency specified in FLIP at least 30 minutes (or as soon as practical) before ETA to announce that hazardous materials are on board and to verify that the appropriate base support agencies have received the departure message. If not, transmit the mission number, ETA, and information listed in **Paragraph 6.60.3.3**.

6.60.6.2. If landing at a CONUS civil airport without a tower, give the above information to the nearest FAA flight service station.

6.60.6.3. Request the information be relayed immediately to base operations or the civil airport manager, crash or fire protection agency, and other support activities.

6.60.7. Parking:

6.60.7.1. DoD requires aircraft carrying DoD Hazard Class or Division 1.1, 1.2, explosives, DoT Class A poisons, and certain biological agents and munitions be parked in areas isolated from personnel. The PIC is responsible for ensuring cargo is correctly identified to the tower and ground control. When aircraft are not directed to an isolated area, identify the cargo again to tower or ground control. When identification is acknowledged, the host is solely responsible for selecting the parking area. Should host procedures be questionable, submit trip reports or hazard reports, as appropriate, to document such occurrences. (T-2)

6.60.7.2. The military host is responsible for placarding aircraft. For non-military installations, the briefing to the PIC will include placarding requirements and, if required, placards will be furnished at the onload base. The shipper must make prior arrangements with the airport manager for shipments of hazardous materials requiring placarding. The shipper is responsible for cargo identification, fire-fighting procedures, and isolated parking requirements. (T-2)

6.60.8. Unscheduled Landing Due to In-flight Emergency. Transmit unclassified information to the appropriate air traffic control facility as follows: (T-2)

6.60.8.1. Nature of emergency and intent to land.

6.60.8.2. Aircraft position and ETA.

6.60.8.3. Number of personnel and location in aircraft.

6.60.8.4. Fuel on board.

6.60.8.5. That hazardous materials are on board, location of the cargo, and applicable information listed in **Paragraph 6.60**.

6.60.9. After Unscheduled Landing. Contact the AFSOC Command Center or appropriate C2 agency concerned by telephone, HF radio, or message, giving arrival notice, hazardous materials' information, and other pertinent information as required. (T-2)

Chapter 7

AIRCRAFT SECURITY

7.1. General. This chapter provides guidance for aircraft security on the ground and in-flight. AFSOC AC-130W aircraft are Protection Level "C" resources. This security priority designation applies to operational aircraft, wherever they are located, worldwide. Some aircraft contain equipment and documents that require protection per DoD 5200.1-R and AFI 31-401, *Information Security Program Management*.

7.2. Procedures. The PIC is ultimately responsible for the security of their aircraft when located away from US military installations. AFJI 31-102, *Physical Security*, covers security arrangements when US Air Force aircraft are located on other DoD military installations. Arrangements must be made to protect the aircraft during crew rest status at non-US protected locations. If US military security forces are not available, the US embassy assigned to that country must be consulted to ensure security arrangements are made. For missions involving a planning agency, the agency must coordinate with the PIC to ensure the planned security measures conform to mission requirements. The amount of security required will vary, depending on location and ground time. (T-2)

7.2.1. For non-permissive or uncertain environments, the agency requesting the mission is responsible for airfield and runway security. The crew will work with the agency requesting the mission to insure security meets the requirement for the mission. See AFTTP 3-33 for security and planning details for these types of operations. (T-2)

7.2.2. For permissive environments the PIC will receive a threat assessment and force protection capability evaluation briefing at home station prior to departure and receive updates en route, if required. When landing at a DoD component installation, the installation commander is responsible to provide adequate security for the aircraft. The PIC will determine if security is adequate. Planning agencies and PIC will use [Table 7.1](#) to help assess the risk to parked aircraft for planned overnight stops located at non-US military installation overseas and civilian airfields. (T-2) **Note:** Aircrews do possess the training to provide the appropriate security when present at the aircraft. For unscheduled or emergency landings at non-USAF installations, PIC will assess the aircraft security situation and take the following actions, if force protection capability appears insufficient: (T-2)

7.2.2.1. Aircrew surveillance. If the aircraft is not remaining overnight, aircrews are capable of maintaining appropriate aircraft security. The PIC will direct armed crew members to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity. (T-2)

7.2.2.2. Area Patrol. Request area patrol coverage from local security forces to include back-up response forces. If local authorities request payment for this service, use AF Form 15, *USAF Invoice*. (T-2)

7.2.2.3. Departure without Crew Rest. If local security forces are unacceptable or unavailable, the PIC may waive FDP restrictions IAW AFI 11-202, Vol 3 and depart as soon as possible for a destination with adequate force protection. If unable to depart the location due to system malfunction, the aircrew must secure the aircraft to the best of their ability. In no case, will the entire crew leave the aircraft unattended. Crew rest

requirements will be subordinate to aircraft security when the airframe may be at risk. The PIC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. PIC will coordinate through home station channels to acquire additional security. (T-2)

7.2.3. Tailored Security Measures. Standard physical security measures may be impractical at times due to mission, terrain, climate, sociopolitical sensitivities, or other factors. For example, some countries don't allow armed security personnel. On other deployments, the mission may rely on maintaining a low profile and attracting as little attention as possible. At such locations, tailor security measures to meet unique requirements when necessary. As a minimum lock aircraft entry points and hatches. If it is not possible to lock aircraft, secure aircraft entry points and hatches in a manner to indicate unauthorized entry, i.e., taping hatch release handles or using seals. The PIC is the final authority for determining tailored security measures. Contact with US Embassy personnel is required at locations where security agreements are not in existence. (T-2)

7.2.4. Ground security teams. Ground security teams may be considered to guard the aircraft for planned overnight stops. Teams may travel in Mission Essential Personnel (MEP) status and are responsible to the PIC at all times. The PIC will ensure security team members receive a mission briefing, aircraft egress, and passenger briefings, as appropriate. (T-2) The squadron commander is the final approval authority for the need of ground security teams for their aircraft and authority may be delegated no lower than the PIC. (T-3)

7.2.4.1. Ground security teams will comply with AFMAN 24-204 at all times when carrying weapons, ammo, and equipment onboard the aircraft. (T-2)

7.2.4.2. Due to the sensitivity of weapons in foreign countries, ground security teams will keep their weapons inside the aircraft and out-of-sight of foreign nationals, even if the FCG allows them to be carried outside the aircraft. If a destination requires weapons be carried outside the aircraft, the controlling MAJCOM must approve such action prior to deployment. (T-2)

7.2.5. Unauthorized Entry. If, in the PIC's judgment, the aircraft needs to be locked and sealed as a measure to detect unauthorized entry:

7.2.5.1. Use the aircraft lock. (T-2) **Note:** The aircraft should be locked during all off-station missions remaining overnight.

7.2.5.2. If the aircraft lock is unavailable comply with **Paragraph 7.2.3**. Close and seal the main crew entrance door using a metal boxcar seal or other controllable device to identify forced entry. Wipe the immediate area around the seal clean to help investigate forced entry. If the seals are damaged or have been tampered with, notify the appropriate local authorities, the controlling agency, and inspect the aircraft thoroughly. (T-2)

7.2.5.3. Coordinate with the local base operations representative on procedures for servicing the aircraft while the crew is away. If a padlock is used, the key or combination will be left with base operations or the representative for servicing and maintenance personnel. (T-2) **Note:** At a Temporary Duty (TDY) location with munitions on board a crew member or maintenance personnel will be at the aircraft at all times or the aircraft

will be locked. If the aircraft is left unattended, the PIC will ensure the appropriate protection is provided by flightline security forces. (T-2)

7.2.6. Security awareness is crucial to effective mission accomplishment. Aircrews must always remain vigilant to their surroundings, especially at high threat, low security locations. During pre-flight activities, aircrews will inspect accessible areas, to include aircraft wheelwells, air-conditioning compartments, and cargo compartment for unauthorized packages, personnel, or other unfamiliar devices. Report any suspicious items to host security forces. Aircrews will maintain a heightened security posture throughout all pre-takeoff activities. (T-2)

7.3. Aircraft Security Risk Assessment Matrix. Planning agencies and the PIC will use this matrix to help assess the risk to parked aircraft in a permissive environment. This matrix will be used for planned overnight stops at non-US military installations overseas and civilian airfields. A cumulative score of less than 55 implies that normal unmanned aircraft security measures are adequate. A score of 55 to 90 implies moderate security risk. (T-2) Commander may consider additional security measures. If the cumulative score is greater than 90, commanders should consider deploying or contracting security personnel. The squadron commander or mission commander is the final approval authority for aircraft security issues. Authority may be delegated no lower than the PIC. (T-3) **Exception:** During unscheduled or emergency landings the PIC is the final approval authority for aircraft security. The PIC should contact the US Embassy or United States Defense Attaché Office for security assistance. **Note:** Normally, additional security for the aircraft is not required at military installation within a NATO country or US civilian airfields approved by the FAA/TAS.

Table 7.1. Aircraft Force Protection Risk Assessment Matrix.

FACTORS	0 POINTS	5 POINTS	10 POINTS	15 POINTS
The local terrorist threat is currently: ¹	Negligible	Low	Medium ³	High ³
The local mob violence threat is currently: ¹	Negligible	Low	Medium ³	High ³
Installation/airport security services are:	Provided by host military forces only	Provided by host military and contract security forces	Contract security forces only	Not available ³
Host security forces control entry:	The flightline and installation/airport	To the flightline only	To the installation/airport only	To neither the flightline nor the installation/airport ³
There is perimeter fencing or barriers around:	The flightline and installation/airport	The flightline only	The installation/airport only	Neither the flightline or the installation/

FACTORS	0 POINTS	5 POINTS	10 POINTS	15 POINTS
				airport ³
Host security forces will provide _____ to guard the aircraft	An armed sentry	An unarmed sentry	Random security patrol coverage only	No sentry or random patrol coverage ³
Host security forces will _____ security incidents involving the aircraft	Provide armed response to	Provide unarmed response to	Notify civilian authorities of	Notify the PIC of ³
The aircraft will be parked:		Separate from host military and civilian aircraft	Among other host military aircraft only	Among civilian aircraft
The aircraft will _____ illuminated during the hours of darkness ²		Be adequately	Be marginally	Not be ³
TOTAL POINTS: 1. Derive the local threat from valid intelligence sources only. 2. "Adequate lighting" is equal to the illumination provided by one standard USAF light cart. 3. If a security response team and security patrol is not present, commanders should consider deploying or contracting security personnel.				

7.4. Protective Standards for Aircraft Carrying Distinguished Visitors (DV). This paragraph applies specifically to aircraft transporting DV Code 4 or above. PICs are responsible for aircraft security at en route stops. (T-2)

7.4.1. DoD Installations. Notify the base security forces of estimated arrival and departure times. Request continuous security surveillance during the entire ground time. If the installation is unable to comply, arrange for the best protection available. (T-2)

7.4.2. Non-DoD Installations. Contact the airport manager or installation commander to arrange for force protection. If available security is inadequate, purchase additional security using AF Form 15, *US Air Force Invoice*. (T-2)

7.5. Arming of Crew Members. When directed, at least one crew member each from the flight deck and cargo compartment will carry weapons. (T-2)

7.5.1. Issue. Before departing home station, authorized crew members will obtain weapons, ammunition, lock, and key. Crew members must present a current AF Form 523, *USAF*

Authorization to Bear Firearms, to be issued a weapon. Crew members will be reissued the same weapon until the mission terminates at home station. If an armed crew member must leave the crew en route, transfer the weapon to another authorized crew member, using AF Form 1297, *Temporary Issue Receipt*. (T-2)

7.5.2. Loading and Transfer of Weapons. Load and unload weapons at approved clearing barrels/facilities if available. To transfer a loaded weapon to another crew member, place the weapon on a flat surface. Do not use a hand-to-hand transfer. (T-2)

7.5.3. Wearing of Weapons. Wear weapons in a holster, concealed at all times to protect the identity of armed crew members. Do not wear weapons off the flightline, except to and from the C3, armories, and other facilities associated with aircrew activities such as base operations, fleet service, cargo or passenger terminals, flightline cafeterias, snack bars, etc. (T-2)

7.5.4. Weapons Storage. Crew members will be armed before beginning preflight or onload duties. When no passengers are on board and after a satisfactory stowaway check, weapons may be stored in the gun box during flight. If no gun box is available retain weapon for the duration of the flight. Crew members will rearm before landing. Weapons need not be unloaded before being placed in the gun box. (T-2)

7.5.5. Crew Rest. During crew rest, store weapons in the most secure facility available, normally the base armory. If a weapons storage facility is unavailable or the country prohibits or restricts the entry of weapons, secure firearms and ammunition in the gun box. (T-2)

7.5.5.1. Aircraft without a Gun Box. If an aircraft without a gun box must remain overnight at a location where a government-owned storage facility is unavailable, use the nearest acceptable facility. Acceptable storage facilities are US or Allied military services armories, US National Guard and Reserve armories, and US civil law enforcement armories. If none of these are available, or the PIC believes weapons security may be compromised, crew members may secure their weapons in their quarters, one crew member will remain with the weapons at all times. In this case, turn the ammunition over to the PIC. (T-2)

7.6. General Anti-Hijacking Guidance. Aircrews must make every reasonable effort to resist an aircraft hijacking attempt, resistance may vary from dissuasion, to direct physical confrontation, including the use of deadly force. Due to the sensitive nature of anti-hijacking procedures, crew members should reference AFI 13-207, *Preventing and Resisting Aircraft Piracy (for official use only)*, and the FIH for specific guidance. Aircrews will not release any information concerning those procedures or hijacking attempts. Anti-hijacking is a crew duty performed exclusively by aircrew personnel. The hijacking of an AFSOC aircraft could create a serious international incident and jeopardize the safety of passengers and property. An aircraft is most vulnerable when the crew is on board and the aircraft is ready for flight. Hijackers cannot be dealt with as ordinary criminals. Some are mentally disturbed, emotionally unstable individuals for whom the threat of death is not a deterrent, but a stimulus to crime. Delay tactics have been most successful in saving lives and property. Detection of potential hijackers before they board the aircraft is the best solution to the problem. (T-2)

7.6.1. Anti-hijacking inspections of space-required passengers may be conducted at the aircraft by the aircrew. Passengers (including MEP) will not carry weapons and/or ammunition on their person or in hand-carried baggage on board an aircraft. (T-2) **Exception:** Special agents/guards of the Secret Service or State Department, and other individuals specifically authorized to carry weapons with coordination of the PIC. In all cases the crew will be aware of location of weapons and ammunition. (T-2)

7.6.1.1. If individuals must clear their weapons before boarding the aircraft, and access to clearing barrel/facilities is limited, as a minimum, direct them to:

7.6.1.1.1. Move to a safe, clear area at least 50 ft from any aircraft, equipment, or personnel before un-holstering/un-slinging their weapons.

7.6.1.1.2. Clear their weapons in accordance with standard safety procedures.

7.6.1.2. Deadhead crew members will not retain custody of ammunition on an aircraft but will turn it in to the troop commander or PIC. (T-2) **Exception:** During combat operations, personnel may carry unloaded weapons and ammunition on board the aircraft. When the tactical situation dictates, personnel who might engage an enemy force immediately upon deplaning at the objective may carry loaded weapons aboard the aircraft at the discretion of the troop commander/team leader, and with the PIC's concurrence. Weapons will not be breached until clear of the aircraft. (T-2)

7.7. Specific Anti-Hijacking Guidance. It is imperative that all crew members are familiar with the ground and in-flight resistance actions, covert communications, and forced penetration of unfriendly airspace procedures in AFI 13-207 and the FIH. In the event of a hijacking, crew members must act immediately and resourcefully, without instruction, in order to counter the attacker successfully. (T-2)

Chapter 8

OPERATIONAL REPORTS AND FORMS

8.1. General. This chapter contains a description of applicable reports and forms. For assistance in completing safety forms contact the wing/group, unit, or local flight safety officer.

8.2. AF Form 457, USAF Hazard Report. Refer to AFI 91-202, *The USAF Mishap Prevention Program*. The USAF hazard reporting system provides a means for Air Force personnel to alert supervisors and commanders to hazardous conditions requiring prompt corrective action. A hazard is any condition, act, or circumstance that jeopardizes or may jeopardize the health and well being of personnel, or which may result in loss, damage, or destruction of any weapons system, equipment, facility, or material resource.

8.3. AF Form 651, Hazardous Air Traffic Report. Refer to AFI 91-202 Attachment 3, *Hazardous Air Traffic Report (HATR) Program*.

8.3.1. The Air Force HATR program provides a means for personnel to report all near midair collisions and alleged hazardous air traffic conditions. Use information in HATRs only for mishap prevention. AFI 91-202 lists reportable incidents.

8.3.2. Procedures:

8.3.2.1. Make an airborne report of the hazardous condition to the nearest ATC agency (e.g., center, flight service station, control tower, or aeronautical radio station), and give the following information as appropriate: (T-2)

8.3.2.1.1. Identification or call sign.

8.3.2.1.2. Time and place (radial/distance measuring equipment, position relative to the airfield, etc.).

8.3.2.1.3. Altitude or flight level.

8.3.2.1.4. Description of the other aircraft or vehicle.

8.3.2.1.5. Include a verbal statement as soon as possible after occurrence that a written HATR will be filed upon landing. **Note:** ATC agencies (e.g., FAA, etc.) must know if an official report is being filed.

8.3.2.2. File the HATR as soon as possible (within 24 hours) using any available means of communication. Normally, it should be filed at the base operations office at the landing airport. If this is impractical and if communications permit, notify the safety office of the Air Force base where the condition occurred, the safety office at the home station, or as prescribed by the overseas MAJCOM. In any case, provide the safety office with all available information needed to prepare AF Form 651. Turn in the completed AF Form 651 to the wing/group safety office. (T-2) **Note:** HATRs are not privileged information and may be released outside the USAF.

8.3.3. Individuals submitting a HATR are granted immunity from disciplinary action provided:

8.3.3.1. Their violation was not deliberate.

8.3.3.2. They committed no criminal offense.

8.3.3.3. No mishap occurred.

8.3.3.4. They properly reported the incident using the above procedures.

8.4. AF Form 711B, USAF Aircraft Mishap Report Worksheet. Refer to AFI 91-204.

8.4.1. Responsibilities. Notify the appropriate authorities of any mishap involving aircraft or crew. When notified, AFSOC units will initiate investigative and reporting actions in accordance with AFI 91-204. (T-2) **Note:** Do not attempt to classify a mishap.

8.4.2. Reportable Mishaps:

8.4.2.1. Report damage to the aircraft, or injury to the crew or passengers; as well as any damage or injury to another organization's equipment or personnel resulting from the movements or actions of an aircraft or crew. (T-2)

8.4.2.2. Report the following occurrences: (T-2)

8.4.2.2.1. A physiological episode. A physiological reaction, near accident, or in-flight hazard due to medical or physiological reasons. **Note:** In the event of a physiological episode, all crew members and passengers involved will report to a flight surgeon as soon as practical and request that a Class E physiological episode be reported in Air Force Safety Automated System (AFSAS). Physiological episodes include the following:

8.4.2.2.1.1. Proven or suspected case of hypoxia.

8.4.2.2.1.2. Carbon monoxide poisoning or other toxic exposure.

8.4.2.2.1.3. Decompression sickness due to evolved gas (bends, chokes, neurocirculatory collapse), or severe reaction to trapped gas resulting in incapacitation.

8.4.2.2.1.4. Hyperventilation.

8.4.2.2.1.5. Spatial disorientation or distraction resulting in an unusual attitude.

8.4.2.2.1.6. Loss of consciousness from any cause.

8.4.2.2.1.7. Death by natural causes of any crew member in-flight.

8.4.2.2.1.8. Unintentional loss of pressurization if cabin altitude is above FL180, regardless of effects on personnel.

8.4.2.2.1.9. Alcohol intoxication and hangover (crew only).

8.4.2.2.1.10. Illness (both acute and pre-existing), including food poisoning, dehydration, myocardial infarction, seizure, and so forth.

8.4.2.2.1.11. Exposure to toxic, noxious, or irritating materials such as smoke, fumes, or liquids.

8.4.2.2.2. In-flight flameout, engine failure, required engine shutdown, suspected engine power loss, or loss of thrust sufficient to preclude maintaining level flight above minimum en route altitude (MEA). **Note:** Intentional shutdowns for

training and FCF are excluded; however, report failure to restart, using the criteria above.

8.4.2.2.3. Uncommanded propeller reversal.

8.4.2.2.4. Flight control malfunction resulting in an unexpected or hazardous change of flight attitude, altitude, or heading.

8.4.2.2.5. Malfunction of landing gear when difficulty is experienced using emergency system or procedures.

8.4.2.2.6. In-flight loss of all pitot-static instrument indications or all gyro stabilized attitude or directional indications.

8.4.2.2.7. Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

8.4.2.2.8. All cases of departure from intended takeoff or landing surface onto adjacent surfaces.

8.4.2.2.9. Any incident that does not meet established criteria for a reportable mishap but, in the judgment of the PIC, must be emphasized in the interest of flight safety.

8.5. Reports of Violations/Unusual Events or Circumstances. Violations identified in AFI 11-202, Vol 3 and navigation errors (including overwater position errors exceeding 24 nm, border and ATC violations) will be reported. (T-2)

8.5.1. Include the following: factual circumstances, investigation and analysis, findings and conclusions, recommendations, and actions taken. (T-2)

8.5.1.1. Attachments should include the following: notification of incident, crew orders, statements of crew members (if applicable), and documenting evidence (logs, charts, etc.).

8.5.2. In addition to the information listed, the historical flight plan will be downloaded onto removable media and turned in to the C2 center or owning standardization and evaluation office. (T-2)

8.5.3. Send the original investigation report within 45 days to HQ AFSOC/IG. AFRC units receiving alleged violations will send the original investigation through channels to arrive at HQ AFRC/IGI within 35 days. HQ AFRC/IGI will send the investigation report to HQ AFSOC/IG within 45 days. (T-2)

8.5.4. The following Operations Report (OPREP)-3, Event or Incident Report, reporting procedures for all aircraft notified of navigational errors exceeding 24 nm will be reported under AFI 10-206. (T-2)

8.5.4.1. On notification of a navigational position error, the PIC (or agency receiving notification) documents the circumstances surrounding the incident (report content below) and ensures submission of an OPREP-3 report through C2 channels. (T-2)

8.5.4.2. Include the following: (T-2)

8.5.4.2.1. Name and location of unit submitting report, mission identification number, reference to related OPREPs-3, type of event (e.g., state "navigation position error"), date, time (Zulu), and location (e.g., air route traffic control center area).

8.5.4.2.2. Description of facts and circumstances. Include aircraft type and tail number, unit (wing/group or squadron assignment of crew), home base, route of flight, point of alleged deviation, and miles off course.

8.5.5. PICs must keep the appropriate agencies apprised of any unusual events or circumstances impacting their missions. Examples of reportable events include meaconing, intrusion, jamming, interference, fuel dumping, loss of multiple engines, hostile fire, injury to passengers or crew members, etc., This list is not exhaustive. Some events may require the C2 agency to forward OPREP reports to higher headquarters. The old adage, "when in doubt, report it," applies. (T-2)

8.6. Petroleum, Oil, and Lubricants (POL) - Aviation Fuels Documentation. This section prescribes Aviation Petroleum, Oil, and Lubricants (AVPOL) procedures that ensure correct documentation, form and invoice processing, and program supervision. Reference DESC-I-31, Purchase of Aviation Fuel and Services at Commercial Locations. Use the Multi-service Corporation (MSC) air card for the purchase of aviation fuel and ancillary ground services at commercial airports (and some military installations) worldwide. The air card is authorized for use by all US government aircraft, state, and local law enforcement aircraft, and some foreign government aircraft. All PICs should plan to use the platinum MSC card. In most cases, there will be no changes when refueling at non-Defense Energy Support Center (DESC) contract locations. The MSC card is accepted at approximately 4,800 locations worldwide. A list of all MSC-accepting merchants can be found at <https://www.airseacard.com>. It replaces the Standard Form (SF) 44, *Purchase Order-Invoice-Voucher*, at locations that accept the MSC card. (T-2)

8.6.1. Responsibilities. Aircrew and maintenance personnel will be familiar with AVPOL procedures and documentation requirements of this chapter. Improper use of the MSC card could create financial liability for the purchaser. (T-2)

8.6.2. Refuel/defuel USAF aircraft at DoD locations whenever possible. If DoD service is not available, purchase fuel from other source(s) in the following priority: (T-2)

8.6.2.1. Defense Fuel Supply Center (DFSC) or Canadian into-plane contracts. **Note:** DoD FLIP en route supplements identify locations with into-plane contracts.

8.6.2.2. Foreign government air forces.

8.6.3. AVPOL Forms Documentation and Procedures.

8.6.3.1. The DD Form 1898, *Fuel Sale Slip*, is the fuel transaction receipt used for purchases at other DoD locations, including DFSC into-plane contract locations. Log and place the DD Form 1898 inside the AF Form 664. The PIC or designated representative shall complete this form. (T-2) **Note:** If the contractor insists on a unique invoice along with the DD Form 1898, annotate the vendor's invoice with "DUPLICATE DD Form 1898 ACCOMPLISHED."

8.6.3.2. The AF Form 664, *Aircraft Fuels Documenting Log*, is a tool to log and store all AVPOL transaction forms. Record all off-station transactions on the front of the form

and insert the original form inside the envelope. Turn in the AF Form 664, with supporting forms, to maintenance debriefing or as directed by local procedures. The PIC or designated representative shall complete this form when appropriate. (T-2)

8.6.3.3. The SF 44 may be used to purchase fuel, ground services, and/or other authorized products when no MSC card contract is in place.

8.6.3.3.1. SF 44 fuel purchases where Fixed Base Operator (FBO) agrees to invoice DESC for payment.

8.6.3.3.1.1. The aircrew shall present the SF 44 as the purchase invoice when an FBO refuses to accept the MSC card. The aircrew shall complete the SF 44 and attach it to the FBO vendor ticket/invoice when the FBO also declines use of the SF 44 and uses its own invoice/receipt. Fuel purchases shall be documented on a separate SF 44 from ground services and other authorized products since the FBO must invoice DESC for the fuel and the customer for non-fuel product and services. (T-2)

8.6.3.3.1.2. Copies 1 and 2 of the SF 44 shall be provided to the FBO. Copy 1 of the SF 44 and one copy of the FBO commercial invoice, if applicable, shall be forwarded to the following address by the FBO to bill/invoice DESC: DESC-RRF, Building 1621-K, 2261 Hughes Avenue, Suite 128, Lackland AFB, Texas 78236. (T-2)

8.6.3.3.1.3. Copy 3 of the SF 44 and one copy of the FBO commercial invoice, if applicable, shall be provided to the aircrew. Log and place a copy inside the AF Form 664. Aircrews shall present all fuel purchase receipts to the designated aviation squadron Certifying Official and/or Accountable Official upon return to home station to enable timely validation and financial obligation processing into the Fuels Automated System. (T-2)

8.6.3.3.2. SF 44 fuel purchases where the FBO requires cash payment.

8.6.3.3.2.1. Cash fuel purchases are only authorized when either the DoD 4500.54G, DoD Foreign Clearance Guide, requires cash payment, or when FBO locations outside the United States and US Territories refuse MSC card and/or SF 44 invoicing processes. Aircrews required to pay cash for aviation fuel purchases shall employ the following procedures: (T-2) **Note:** these procedures do not apply to non-fuel products or services.

8.6.3.3.2.1.1. The aircrew shall obtain cash from a local DoD Finance source that is charged to an approved Treasury suspense account prior to home station departure. (T-2)

8.6.3.3.2.1.2. Aircrews shall complete the SF 44 and obtain the FBO fuel vendor annotation in block 11 of the SF 44 to confirm total cash amount and also sign and date the SF 44 blocks 20 and 21. Log and place a copy inside the AF Form 664. Aircrew shall return unused cash to their local DoD Finance source upon return to home station. Present the completed SF 44 (for non-fuel charges only) to the appropriate home station administrative personnel for processing (e.g., Wing Refueling Document Control Officer,

Finance Office, etc.). (T-2)

8.6.3.3.3. SF 44 purchases of ground services and other approved products (not fuel).

8.6.3.3.3.1. Complete a separate SF 44 for non-fuel purchases. Provide the FBO copies 1 and 2 of the SF 44. The FBO shall use copy 1 and one copy of the FBO commercial invoice, if applicable, to directly bill/invoice the purchasing organization. Block 9 of the SF 44 shall reflect the organization name and address of the finance office responsible for payment to the FBO. The purchasing organization shall make payment to the FBO upon receipt of the invoice from the FBO. Log and place a copy inside the AF Form 664. (T-2)

8.6.3.3.4. If the vendor presents their own form for signature and accepts the SF 44, write the statement "SF 44 Executed" on the vendor's form. (T-2)

8.6.3.3.5. Turn in two copies of the SF 44 to the operations officer at home station. (T-2)

8.6.3.3.6. Present the aircraft identiplat for purchases at approved locations. Make certain the invoice includes date of transaction, grade of product, quantity issued/defueled, unit of measure, and signature of Air Force member who accepted product. If vendor also requires completed SF 44 write statement, "AF FORMS EXECUTED" on vendor's invoice. Log and place a copy inside the AF Form 664. (T-2)

8.6.3.4. Purchasing Aviation Fuel in Canada. The DoD and Canadian Department of National Defence have signed a memorandum of understanding allowing DoD aircraft to use the DD Form 1896, *Jet Fuel Identiplat*, when refueling at Canadian airfields with a Canadian National Defense Contract (CNDC). Use the AIR for fuel purchases at Canadian airports without a CNDC, and for ground handling services at all Canadian airports. (T-2)

8.6.3.5. Use host country forms to effect purchases at foreign military airfields, including replacement-in-kind locations. Hand scribe information from aircraft identaplat on the local form. Log and place a copy inside the AF Form 664. (T-2)

8.6.3.6. AF Form 1994, *Fuels Issue/Defuel Document*, records fuel purchases at USAF bases using a valid DD Form 1896, *Jet Fuel Identiplat*. The PIC or designated representative shall complete the form then log and place a copy inside the AF Form 664. (T-2)

8.6.3.7. AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, records POL actions for particular airframe IAW applicable directives. The PIC or designated representative shall complete the form and submit to maintenance debrief. (T-2)

8.6.3.8. DD Form 1896, *Jet Fuel Identiplat*, is the aircraft fuel and oil charge card.

8.6.3.9. The PIC will verify the AFTO Form 781H is completed and turned in to maintenance debriefing following the mission. (T-2)

8.6.3.10. For off-station missions, the PIC will complete or verify accuracy of the SF 44, AF Form 664, AFTO Form 781H, DD Form 1898, and associated fuels receipts then

place them in the AF Form 664 (use eight digits for all USAF aircraft tail number entries). The PIC will transmit all AF Form 664 information via phone, fax, or message if mission causes him/her to be off-station past the last day of the month. (T-2)

8.7. AF Form 15, United States Air Force Invoice. Used to purchase ground fuels, oils, or services at non-DoD activities. When completed, log and place inside AF Form 664, *Aircraft Fuels/Ground Servicing Documentation Log*. (T-2)

8.7.1. Use the AF Form 15 for vendor services/supplies only if contract vendors are not available or the contract vendor will not accept the aircraft identiplate. (T-2)

8.7.2. If the vendors require a signature on their form and an AF Form 15 has been used, write the statement "AF Form 15 Executed" on the vendor's form. (T-2)

8.7.3. Return two copies of the AF Form 15 to the operations officer at home station. (T-2)

8.7.4. Purchases at Canadian into-plane locations will be documented using the local vendor's invoice. AF Form 15 or 315 will not be accomplished. Hand scribe the information from the aircraft identiplate to the vendor's invoice, and complete a separate sheet with the information listed on the Aviation Issues to DoD and Non-DoD, Aircraft Refueling Tender Sheet. Log and place a copy inside the AF Form 664. (T-2)

8.7.5. Purchases at Shell International Trading Company (SITCO) Agreement locations require presenting the aircraft identiplate. The invoice must include the date of transaction, grade of the product, quantity issued or defueled, unit of measure, and signature of the Air Force representative. If the vendor also requires completion of an AF Form 15 or 315 in addition to their invoice, annotate on the vendor's invoice "AF FORMS EXECUTED." Log and place the documentation inside the AF Form 664. (T-2)

8.7.6. Purchases at non-contract commercial airfields are accomplished using the AF Form 15 or 315. (T-2)

8.7.7. Purchases at foreign military airfields, including Replacement-in-Kind locations, the host country forms are used to record the purchase. Information from the aircraft identiplate should be hand scribed on the local form. Log and place a copy inside the AF Form 664. (T-2)

Chapter 9

FLYING TRAINING POLICY

9.1. General. This chapter outlines procedures, requirements, and restrictions for training and evaluation missions. Refer to AFI 11-202, Vol 1, *Aircrew Training*, AFI 11-202, Vol 2, *Aircrew Standardization/Evaluation Program*, AFI 11-2AC-130W, Vol 1, *AC-130W Aircrew Training*, and AFI 11-2AC-130W, Vol 2, *AC-130W Aircrew Evaluation Criteria* for additional information.

9.2. Instructor or Flight Examiner Briefings. Before all training/evaluation missions, instructors/flight examiners will brief their students/examinees on the training/evaluation requirements, objectives, planned profiles, and seat changes. (T-2)

9.3. Debriefing. After all training flights, instructors will: (T-2)

9.3.1. Review and critique student performance.

9.3.2. Review training requirements fulfilled for each student and aircrew member (all aircrew members should understand thoroughly what training was accomplished).

9.3.3. Answer technical questions.

9.3.4. Preview the objectives of the next mission.

9.3.5. Complete all required documentation.

9.4. Simulated Emergency Procedures (EPs).

9.4.1. Simulate emergencies (engine shutdown, placing switches in other than their normal positions, or an abnormal configuration such as no flap landing or simulated engine failure) only during training, evaluation, or currency flights when an instructor or flight examiner pilot is in one of the pilot seats. Instructor pilot candidates who occupy a pilot seat and are under the supervision of a flight examiner pilot, not in a pilot seat, may practice simulated emergency procedures during initial or re-qualification upgrade evaluations. Preface all simulated emergencies with the word "simulated" and terminate simulated emergencies if an actual emergency arises. All maneuvers discussed in **Paragraph 9.8** require an instructor or flight examiner pilot in accordance with this paragraph, unless otherwise specified in the restrictions. (T-2)

9.4.2. When conducting simulated engine(s) out training, the FE will post actual charted minimum control speeds on the TOLD card. The instructor pilot will maintain positive torque, of no less than 1,000 in-lbs, on the simulated inoperative engine(s). (T-2)

9.4.3. The following guidance applies to all engine(s) out training on AFSOC C-130 aircraft:

9.4.3.1. Instructor pilots should review TO 1C-130H -1-1, *Performance Data*, **Chapter 3** and appropriate TO 1C-130(A)W-1 **Chapter 3** information with their trainee(s) before flight. A complete understanding of minimum control speeds and the factors affecting those speeds are critical to performing simulated engine(s) out training successfully.

9.4.3.2. Normally, turns should be planned to be in the direction of the good engines.

9.4.3.3. Turns into simulated failed engines should be minimized. Turns into simulated failed engines are permissible but require a higher degree of pilot skill than with actual failed engines and must be smooth and coordinated. **WARNING:** Improper application of rudder or power can lead to an immediate out-of-control situation from which recovery might not be possible.

9.4.4. Simulated EPs are prohibited with passengers on board. (T-2) **Exception:** Simulated EPs required for the purposes of a functional check flight are authorized. In this context, personnel on board are required for mission accomplishment. Limit personnel to the absolute minimum required. (T-2)

9.4.5. Conduct simulated emergency flight procedures IAW AFI 11-202, Vol 3 Chapter 5 and this instruction. Use a realistic approach and do not compound emergencies. Limit simulated emergencies to non-critical phases of flight when possible. Notify the controlling agency if a nonstandard traffic pattern or pattern requiring special sequencing is anticipated. (T-2)

9.4.6. During live-fire operations, limit simulated emergency procedures to strike-specific scenarios (i.e., sensor malfunctions, gun malfunctions, etc.) to preclude channelizing attention away from the life-fire. (T-2)

9.4.7. Training maneuver restrictions for specific flight maneuvers and missions are listed in **Paragraph 9.8.**

9.5. Touch-and-Go Landings. Authorized only on designated training, evaluation, or currency missions.

9.5.1. Touch-and-go landings may be performed by: (T-2)

9.5.1.1. Instructor pilots, instructor pilot candidates on initial or re-qualification instructor evaluations, or flight examiner pilots in either pilot seat.

9.5.1.2. Any pilot from either seat providing an instructor pilot, instructor pilot candidate on initial or re-qualification instructor evaluation, or flight examiner pilot is in the other seat.

9.5.1.3. Any current and qualified pilot when the PIC is touch-and-go certified and is so designated on the flight orders. FP and above may fly from either seat, but CP's (MC, FC) must fly from the right seat, except as authorized above.

9.5.2. Touch-and-go landings are authorized when the crosswind component corrected for RCR is within the recommended zone of the landing crosswind chart. Ceiling and visibility/RVR must be at least 300 ft and $\frac{3}{4}$ mile (RVR 40). (T-2)

9.5.3. Include type of touch-and-go as part of the crew briefing, i.e., ground idle or flight idle. Do not perform no-flap ground idle touch-and-go landings. (T-2)

9.5.4. Touch-and-go landings are not authorized when normal wake turbulence criteria are not met, or when intercepting or crossing the flight path of a jumbo jet while performing an approach or landing. (T-2)

9.5.5. The minimum runway for touch-and-go landings is 6,000 ft; 7,000 ft for a ground idle touch-and-go. (T-2)

9.6. Stop-and-Go Landings. Authorized only on designated training, evaluation, or currency missions. (T-2)

9.6.1. Authorized by any C-130 qualified pilot provided the following conditions are met: (T-2)

9.6.1.1. Crosswind component corrected for RCR must be within the recommended zone of the landing crosswind chart. Ceiling and visibility/RVR must be at least 300 ft and $\frac{3}{4}$ mile (RVR 40).

9.6.1.2. Use minimum braking to stop.

9.6.1.3. Runway remaining for takeoff must be sufficient to allow takeoff and refusal speeds to be equal.

9.6.2. Stop-and-go landings are not authorized in conjunction with no-flap landings, when normal wake turbulence criteria are not met, or when intercepting or crossing the flight path of a jumbo jet while performing an approach or landing. (T-2)

9.7. Prohibited Maneuvers. The following maneuvers or procedures are prohibited in the aircraft and may only be practiced in a Weapon System Trainer (WST). (T-2)

9.7.1. Full stalls.

9.7.2. Approach to stalls (except FCF).

9.7.3. Rudder force reversals (fin stalls).

9.7.4. Simulated three-engine takeoff.

9.7.5. Spins.

9.7.6. Simulated runaway trim malfunctions.

9.7.7. Simulated hydraulic system loss by turning engine-driven hydraulic pumps off.

9.8. Maneuver Restrictions.

9.8.1. Windmill Taxi Start. Authorized during daylight. Crosswind component must be within the recommended zone of the takeoff crosswind chart. Runway must be dry, hard-surfaced, and at least 147 ft wide. Flight manual recommendations are mandatory. (T-2)

9.8.2. Aborted Normal Takeoff. Authorized during daylight. Crosswind component must be within the recommended zone of the takeoff cross wind chart. Runway must be dry, hard-surfaced, and long enough to allow refusal and takeoff speeds to be equal. Initiate the abort by stating "REJECT" before refusal speed. Do not practice aborts from touch-and-go or stop-and-go landings. If actual engine shutdown due to a simulated malfunction is to be practiced, it must be pre-briefed. (T-2)

9.8.3. Actual Engine Shutdown and Airstart. In-flight shutdown of one engine may be accomplished at not lower than 2,500 ft AGL in daylight VMC. (T-2)

9.8.4. No-Flap Landing. Authorized in conjunction with a simulated engine(s) inoperative landing. Maximum gross weight is 125,000 pounds and the crosswind component must be within the recommended zone of the landing crosswind chart. Consider the CP's level of experience and proficiency when determining if he is ready for no-flap training. Authorized in night VMC and day IMC if weather is at or above circling minimums. (T-2)

9.8.5. Go-Around or Missed Approach. Initiate VFR go-arounds no lower than 100 ft AGL when practicing simulated emergencies other than simulated engine failures. Initiate practice instrument missed approaches no lower than the minimum altitude for the approach. Minimum altitude is 500 ft AGL when aircraft equipment or personnel are on the runway. (T-2) **Note:** Instructor/flight examiner pilot is not required.

9.8.6. Simulated Engine-Out Go-Around or Missed Approach. Initiate simulated engine-out go-around at not lower than 200 ft AGL. Initiate simulated engine-out missed approach no lower than the minimum altitude for the approach. (T-2)

9.8.7. Simulated Engine-Out Landing. One throttle may be retarded to FLIGHT IDLE at not less than air minimum control speed (one-engine inoperative, out of ground effect) and not less than 300 ft AGL. Authorized in daylight IMC (circling minimums for the approach being flown), or night (1,000-foot ceilings and 2 sm visibility or circling minimums, whichever is higher). Use all 4 engines for touch-and-go takeoff. (T-2)

9.8.8. Simulated Two-Engine Out Landing. Simulate failure of the second engine at not less than 1,000 ft AGL and not more than 125,000 pounds gross weight. Authorized in daylight VMC on a dry, hard surface runway at least 147 ft wide with a crosswind component within the recommended zone of the landing crosswind chart. Use all 4 engines for the touch-and-go takeoff, go-around, or missed approach. (T-2)

9.8.9. Simulated Two-Engine Go-Around or Missed Approach. Authorized in daylight VMC above 5,000 ft AGL. Airspeed at initiation of go-around will not be lower than two-engine air minimum control speed. (T-2)

9.8.10. Unusual Attitudes and Spatial Disorientation. Authorized at not lower than 10,000 ft AGL in daylight VMC. (T-2)

9.8.11. Slow Flight. Fly at approach, threshold, and 1.2 times stall speed with gear down and flaps 0%, 50%, or 100%. Do not exceed 15° of bank. (T-2)

9.8.12. Simulated Instrument Flight. Simulated instrument flight may be flown and logged without use of a vision-restricting device. The use of a hood or other artificial vision-restricting device for any phase of flight is prohibited. (T-2)

9.8.13. Air-To-Air Refueling Training Restrictions. During training missions the signal amplifier will not be used in the Over Ride (OVRD) setting. (T-2)

Chapter 10

LOCAL OPERATING PROCEDURES

10.1. General. Units will publish local and/or unique unit operation procedures as a supplement to this chapter commencing with **Paragraph 10.2**. The title will indicate the unit concerned (e.g., “10.2. 73 Special Operations Squadron Local Operating Procedures”). (T-2)

10.1.1. Procedures in this chapter will not duplicate, alter, amend or be less restrictive than those in this instruction. (T-2)

10.1.2. After validation, send final copies to HQ AFSOC/A3V. (T-2)

Chapter 11

NAVIGATOR PROCEDURES

11.1. General. In addition to the duties listed in the flight manual, other applicable technical orders, and this instruction, the PIC may assign other duties to the NAV, as necessary. All AC130W flight operations requiring a NAV will use the navigation forms found in **Paragraph 11.1.1** of this instruction. (T-2)

11.1.1. Forms. This volume contains instructions for completion of AF Forms 4116 and 4139. Computer Flight Plans (CFP) may be used in lieu of the AF Form 70, *Pilot's Flight Plan and Flight Log* and the flight plan portion of the AF Form 4116.

11.1.2. Definitions. Category II Routes are defined as any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (Non directional beacon (NDB), VHF Omnidirectional Radio (VOR), Tactical Air Navigation (TACAN)) at least once each hour with positive course guidance between such radio aids. Category I Routes are defined as any route that does not meet the requirements of a Category II route, including lowlevel and overwater routes.

11.2. General Mission Planning Procedures.

11.2.1. Flight Plans. Regardless of whether a flight plan is prepared by the aircrew or is furnished by another agency, the PIC and NAV will verify routes and altitudes to ensure proper terrain clearance. On overseas flights, verify the flight planned routing against the diplomatic clearance, if applicable. Ensure all required fuel computations are accurate and complete, and confirm the ramp fuel load is compatible with mission requirements. (T-2)

11.2.2. Category I Routes. Accomplish flight planning using the AF Form 4116, or a Computer Flight Plan (CFP). Compute the required fuel load using the AF Form 4116 or AF Form 4139. (T-2)

11.2.3. Category II Routes. Use the AF Form 70, AF Form 4116, or a CFP. Compute required fuel using the AF Form 4116, or AF Form 4139. Not required in the local flying area. For local training sorties, a personal log may be used. (T-2)

11.2.4. Provide a copy of the flight plan to the pilot. (T-2)

11.2.5. Fuel Planning. Required on all missions. Use AF Form 4116 or AF Form 4139. For tactical missions and local training sorties, a personal log may be used. Fuel requirements and calculations will be accomplished IAW AFI 11-202, Vol 3 AFSOC Sup 1, this instruction, and appropriate performance TO. Accomplish fuel-planning IAW TO 1C130H11 and TO 1C130(A)W1. CFP en route fuel may be used for fuel analysis in lieu of en route fuel derived from the performance TO. (T-2)

11.2.6. NAVs will compute an abort point along the AAR track where conditions will allow for a safe return to a refueling base with appropriate fuel reserves IAW AFI 11-202, Vol 3 and this instruction. This will be used in the event AAR is unable to be completed. Label this point on the NAV's chart. (T-2)

11.2.7. Signature Block. If using AF Form 4116, or equivalent CFP, sign the form after completing the flight plan portion (or verifying the CFP) and completing the time and fuel

analysis, wind factor, and Equal Time Point (ETP) data. The Navigator Signature block is found in Section II of the AF Form 4116. (T-2)

11.3. Computer Flight Planning. The aircrew is always responsible for accuracy of data used in-flight. All computer generated flight plans will be verified for correctness prior to each flight. Use only AFSOC approved computer flight planning software. Untested or Beta versions of developing software will not be used for actual mission planning. (T-2)

11.3.1. Creating Flight Logs. CFPs from approved flight planning software may be used in lieu of manual flight log (AF Form 4116) so long as the CFP provides the same information found on the manual flight log. (T-2)

11.3.2. Electronic Data Transfer. If the flight planning computer transfers a flight plan to the aircraft electronically, it must be an AFSOC approved system. Aircrews will not use unapproved versions of any system to load an aircraft navigation computer. (T-2)

11.3.3. Air Mobility Command (AMC) CFPs. AMC CFPs may be available for missions that meet CFP support criteria and are within the capability of the system. Obtain the CFP through the command post, base weather facility, or base operations dispatcher. Review AMC provided CFP to ensure accuracy for AC-130 missions. (T-2)

11.3.4. Computer Fuel Plans. Computer aided flight-planning systems (that meet the criteria in [Paragraph 11.3.1](#)) produce flight plans and fuel calculations for C-130 and other aircraft. Computer Flight Plans may be used in place of the AF Form 4116. However, add alternate, identified extra, and reserve fuel in addition to the calculation. The printed format is user configurable and may be tailored to local needs. (T-2)

11.4. ETP Calculations.

11.4.1. Use Section II (Fuel/ETP Planning), ETP Calculation portion, of AF Form 4116. Wind Factor and ETP Data Computations are required on Category I routes or Category I portions of routes when the total time between the last suitable airfield (LSAF) and the First Suitable Airfield (FSAF) is 5 hours or more. Suitable airfields are those within 100 nm of flight planned course centerline meeting weather, fuel, and AFSOC C-130 runway requirements. (T-2)

11.4.1.1. For air-to-air refueling missions, make a separate computation for each fuel analysis required. The ETP should drive the location of your planned AAR track. Plan to have sufficient fuel at each End-Air-Refueling (EAR) point to proceed to an abort base if the tanker does not show or if otherwise unable to complete refueling. Use a point abeam the AAR abort base as the LSAF or FSAF for wind factor computations. (T-2)

11.4.1.2. Wind factor and ETP computations are not required for round robin or search missions.

11.4.2. Wind Factor Data. For wind factor data, LSAF means level-off, abeam or over LSAF, or closest planned checkpoint or radio aid within 100 nm of LSAF. FSAF means abeam or over FSAF, closest planned checkpoint or radio aid within 100 nm of FSAF, descent point, or destination. Use any of the options in the ETP options graph, **Figure 11.1**. Specify the option used in the ETP computations section of the AF Form 4116. Record computations in the ETP computations section. (T-2)

11.4.2.1. Total. Compute the average GS between LSAF and FSAF. (T-2)

11.4.2.2. 1st Half. Compute the average GS between LSAF and approximate midpoint between LSAF and the FSAF. Subtract flight-planned average True Airspeed (TAS) from the computed average GS to obtain the 1st half wind factor. (T-2)

11.4.2.3. 2nd Half. Compute the average GS between the approximate midpoint and the FSAF. Subtract flight planned TAS from the computed average GS to obtain the 2nd half wind factor. (T-2)

11.4.3. ETP Data.

11.4.3.1. DISTANCE (LSAF TO FSAF). Enter the total distance (regardless of level off) from or abeam the LSAF along course from departure to or abeam the FSAF long course toward destination. (T-2)

11.4.3.2. (T) MIN. The flight time from the ETP to the FSAF or return to the LSAF.

11.4.3.3. TOTAL TIME TO FSAF - T = TIME TO ETP. Subtract the time, (T) MIN, from the total flight plan time to the FSAF. TIME TO ETP is the total time from departure to the ETP (departure and takeoff may not necessarily be the same). Compute and record ETA to ETP by adding TIME TO ETP to departure time. (T-2)

Figure 11.1. ETP Options.

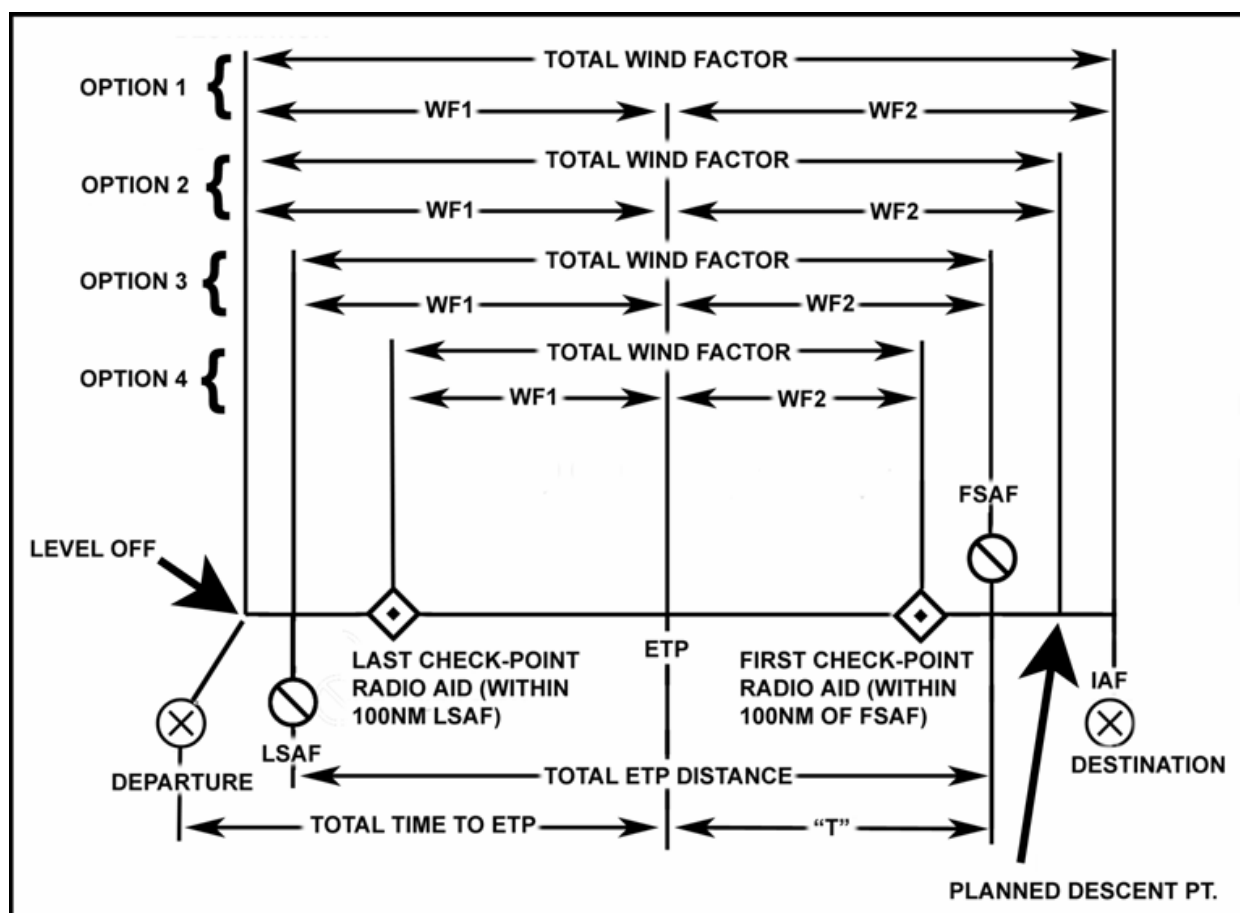


Figure 11.2. Example AF Form 4116 ETP Section.

ETP CALCULATION				
LSAF		MDPT		FSAF
DINNS		BURITT		TXKF
DIST	886	TIME	3+25	DIST
-	278	-	1+18	-
=	608	=	2+07	=
GS	225	WF1	-20	WF2
			225	-20
DIST (LSAF TO FSAF) (886) T(108) MIN				
(WF2-WF1) + 2(TAS) (490) = ^60				
TOTAL TIME TO FSAF - T = TIME TO ETP				
ETP METHOD 1 2 (3) 4 (CIRCLE ONE)				
ENROUTE FUEL FORMULAE				
CLIMB DISTANCE		CLIMB TAS		
CLIMB TIME		= 60		
FUEL FLOW (FFT) ZONE ZONE				
60		X TIME (IN MINS) = FUEL		
START CRUISE FF + END CRUISE FF AVG				
2		= CRUISE FF		
FUEL FLOW FUEL				
PER ENGINE		X 4 = FLOW TOTAL		

11.5. AF Form 4116 Fuel Planning.

11.5.1. Use AF Form 4116, Section II, *Fuel/ETP Planning*. With the exceptions of the items explained in the following paragraphs, all items of the fuel analysis portion of this section are described fully in **Table 11.1**. See **Figure 11.3** for an example of a completed AF Form 4116 Fuel Planning section. **Note:** To compute terminal fuel flow, use the specific range charts or the range summary charts in the applicable aircraft performance manual.

Terminal fuel flow derived from an approved CFP may also be used. **Note:** The IMT AF Form 4116 has several overprints for C-130 use and should not be confused for AC-130 requirements. As seen on the IMT form, these include Holding entry of 2.0, and Taxi entry of 1.3 (AC-130 entry will be either 1.3 or 2.0).

11.5.1.1. Endurance. Flying time based on fuel available at takeoff (Item 11 minus Item 9). It is extracted from the appropriate fuel planning publication, performance manual for the planned constant altitude, forecast temperature deviation, and the aircraft gross weight at takeoff.

Table 11.1. Fuel Load Components.

En route		Fuel for flight time from departure/EAR to EAR/overhead destination or initial penetration fix at cruise altitude (including time for planned search, recovery, approach, and climb, when applicable).	Required Fuel Over Destination	Flight Planned Fuel Load	Required Ramp Fuel Load	
Reserve		10% of flight time between planned refueling points, not to exceed 45 minutes at normal cruise. A minimum of 20 minutes reserve is required on all missions. Compute at terminal fuel flow.				
Alternate + Missed Approach		Alternate: Fuel for flight time from overhead destination of EAR to alternate/abort airfield, or most distant alternate when two are required. Compute at terminal fuel flow. Add 10% reserve when time to an alternate exceeds 1+30. Required whenever an alternate must be filed. Missed approach: 2,200 pounds. Required if destination is below ceiling minimums, but above visibility minimums.				
Holding		Used when alternate not available, located in Alaska, or at latitudes greater than 59 degrees N/S. Use 2,500 pounds. May compute at terminal fuel flow for 45 minutes.				
Approach and Landing		Approach: 1,000 pounds. Entry always required. Minimum landing fuel: 4,000 pounds. Entry always required. This fuel will not be in BURNOFF.				
IDENTIFIED EXTRA	Pressure Loss	Additional fuel for pressure loss at ETP, used when pressurized, carrying passengers, and aircraft oxygen not available to the passengers. Compute at 1,000 pounds/hour for “T” time. If computed fuel is less than item 2, no entry is required here. If computed fuel exceeds item 2, add the difference here.				
	Stored Fuel	Ramp fuel for succeeding legs without refueling.				
	Off-course maneuvering	Fuel for anticipated off-course maneuvering for terrain, thunderstorm avoidance, ATC requirements. Compute at 100 pounds/minute for departure, 50 pounds/minute for en route fuel.				
	Icing	500 pounds for each hour of anticipated icing.				
	Known Holding Delays	Fuel for anticipated or planned holding time. Compute at terminal fuel flow.				
	Insufficient/Unreliable NAVAIDS	1,000 pounds maximum. Add for insufficient or unreliable NAVAIDS at destination.				
Taxi and Runup		Normally 1,300 pounds. For ammo upload missions use 2,000 pounds				
Unidentified Extra		Difference between required ramp fuel and actual ramp fuel.				

Required Over Destination/ Abort Base	Total of Reserve, Alternate and Missed Approach, Holding and Approach and Landing fuels. See Table 11.3 and 11.4 for computing examples.
BURNOFF	Total en route fuel (#1) 1,000 pounds (approach fuel) plus taxi and run up (#9) plus identified extra fuel (#7) (except stored fuel). Entry optional.

Figure 11.3. Example AF Form 4116 - Planning.

II. FUEL/ETP PLANNING		
NAV: Lt Smith	OPERATING WT: 110.0	
AC: Maj Johnson	CARGO/PAX WT: 5.0	
TAIL#: 1056	RAMP FUEL: 39.0	
DATE: 1 Jan 2008	RAMP WT: 154	
CALLSIGN: Reach 1234	TAKEOFF WT: 152.7	
	TIME	FUEL
1. ENROUTE	4+49	27.0
2. RESERVE	+22	2.1
3. ENROUTE + RESERVE	5+11	29.1
4. ALTERNATE + MISSED APPROACH	0	0
5. HOLDING	2.0 3.5	3.5
APPROACH/ 6. LANDING	1.0/4.0	5.0
7. IDENTIFIED EXTRA	0	0
8. TOTAL (3+4+5+6+7) TAKEOFF		37.6
9. TAXI	1.3	1.3
10. REQUIRED RAMP		38.9
11. ACTUAL RAMP	ENDURANCE	39.0
12. UNIDENTIFIED EXTRA		0.1
13. MIN DIV OR (4+5+6+ WRF) REQ OVHD DEST		8.5
1. NOTE: Wing Relieving Fuel (WRF), when required, is calculated as unidentified extra fuel; however, it must be included as required overhead fuel in Block 13.		
2. NOTE: The 4000 LB landing fuel should be included as part of any required WRF.		
NAVIGATOR SIGNATURE		

11.6. AF Form 4139 Fuel Planning. AF Form 4139, *Special Operations C-130 In-flight Refueling Worksheet*. This worksheet is used in conjunction with a Portable Flight Planning System (PFPS) flight plan. The AF Form 4139 allows for fuel quantity information taken directly from a PFPS flight plan. This form is applicable to both single and double air refueling planning. The EAR #1 TO EAR #2 and EAR #2 TO AAR #2 ABORT BASE sections of this form are not applicable to single air refueling planning. Where applicable, use same rules as described for same item in **Table 11.1**. See **Figure 11.4** for an example of a completed AF Form 4139.

11.6.1. Information common to all sections.

11.6.1.1. Item A, OPERATING WEIGHT, is the basic aircraft operating weight plus the cargo & passengers' weight.

11.6.1.2. Ensure the aircraft gross weight does not exceed allowable limits for either ground or air refueling operations, without proper waiver authority. (T-2)

11.6.1.3. Temperature Deviation. Use the appropriate temperature deviation for each route segment. (T-2)

11.6.2. Single Air Refueling Instructions.

11.6.2.1. Section I, TAKEOFF TO EAR #1:

11.6.2.2. EN ROUTE (item 1). Calculate en route fuel from T/O to EAR using the flight planned cruise profile to the air refueling track. Increased fuel burn for time spent at lower altitude while on the AAR track will be accounted for in IDENTIFIED EXTRA (item 3). (T-2)

11.6.2.3. IDENTIFIED EXTRA (item 3). Include 1,000 pounds per hour for the time anticipated at lower altitude on the track prior to and during actual air refueling. (T-2)

11.6.2.4. RESERVE (item 5).

11.6.2.5. FUEL AT EAR #1 (No Onload) B-6, (item 7). Fuel remaining at the EAR #1, does not include AAR onload.

11.6.2.6. PLANNED EAR #1 FUEL (item 8). Planned fuel at EAR #1 including the planned fuel transfer.

11.6.3. Section II, EAR #1 TO AAR #1 ABORT BASE:

11.6.3.1. Complete to account for an unsuccessful fuel transfer. An abort base is required for all refueling tracks. The departure base may be used. The designated abort base must meet alternate airfield weather requirements. (T-2)

11.6.3.2. EN ROUTE (item 9). Time from EAR to abort base.

11.6.3.3. RESERVE (item 10). Combined total for item 5 plus item 10 should not exceed 1+00 Hrs. If the combined total exceeds 1 Hr, add only the balance for a total of 1 Hr in this block. Entry only required when the flight time from the EAR to alternate exceeds 1+30.

11.6.3.4. AAR #1 ABORT ALTERNATE (item 11). Optional entry.

11.6.3.5. HOLDING (item 12). Use 2,500 pounds if abort base is in Alaska, at latitudes greater than 59 degrees N/S, or no alternate is available. (T-2)

11.6.3.6. PLANNED RAMP FUEL (item 16). Must be sufficient to meet the requirements of (item 17, required ramp fuel) and the requirements of Section V fuel planning. (T-2)

11.6.3.7. REQUIRED RAMP FUEL (item 17). Fuel required to fly from departure to the EAR point and continue to the AAR abort base with required reserves, in the event of an unsuccessful fuel transfer during the AAR. Includes fuel required to fly the entire air refueling track without a successful fuel transfer. (T-2)

11.6.3.8. UNIDENTIFIED EXTRA (item 18). Does not need to meet the normal requirement (not to exceed 2,200 pounds), since item 8 (Planned EAR #1 Fuel) must be sufficient to meet Section V, EAR to destination fuel requirements. If unidentified extra fuel is excessive, consideration should be given to reducing the proposed ramp fuel and increasing the proposed AAR onload if possible. (T-2)

11.6.4. Section III, EAR #1 TO EAR #2. Not applicable to single air refueling missions.

11.6.5. Section IV, EAR #2 TO AAR #2 ABORT BASE. Not applicable to single air refueling missions.

11.6.6. Section V, EAR TO DESTINATION:

11.6.6.1. Items separated by a diagonal (/) in this section are applicable to both single and double air refueling missions. The item letter or number prior to the diagonal (/) applies to single air refueling planning.

11.6.6.2. EN ROUTE (item 38). Time from EAR to final destination. Use the planned cruise profile for fuel calculations.

11.6.6.3. RESERVE (item 39).

11.6.6.4. HOLDING (item 41). Use 3,500 pounds if abort base is in Alaska, at latitudes greater than 59 degrees N/S. (T-2)

11.6.6.5. REQUIRED EAR TO DEST (item 44). This is the actual fuel, including reserves, required at the EAR point to fly to the destination. Do not exceed the aircraft maximum gross weight limit established in the applicable flight manual. (T-2)

11.6.6.6. REQUIRED FUEL AT EAR (PRIOR TO ONLOAD) (item 47). The difference between the required EAR to destination fuel (item 44) and planned fuel onload from the tanker (item 45).

11.6.7. UNIDENTIFIED EXTRA. Subtract required fuel at EAR (prior to onload) (item 47) from the planned fuel at EAR (item 46). This value equals the extra fuel carried or additional fuel required (if negative) from the EAR to destination. When negative, additional fuel must be added, to ramp fuel, to the planned AAR onload from the tanker, or in some situations may require moving the air refueling track or adding a second refueling. (T-2)

11.6.8. Double Air Refueling Instructions.

11.6.8.1. Section I, TAKEOFF TO EAR #1:

11.6.8.2. EN ROUTE (item 1). Time and fuel from TAKEOFF to EAR #1. Calculate fuel using the flight planned cruise profile from takeoff to the AAR track. Increased fuel burn for time spent at lower altitude while on the AAR track will be accounted for in IDENTIFIED EXTRA (item 3). (T-2)

11.6.8.3. IDENTIFIED EXTRA (item 3). Include 1,000 pounds per hour to compensate for the time anticipated at lower altitude on the track prior to and during actual air refueling for AAR #1. (T-2)

11.6.8.4. RESERVE (item 5).

11.6.8.5. TOTAL (item 6). Total fuel required from TAKEOFF TO EAR #1. Does not include abort base fuel requirements.

11.6.8.6. FUEL AT EAR #1, no onload (item 7). Fuel remaining at the EAR point. This item does not include the air refueling onload for AAR #1.

11.6.8.7. PLANNED EAR #1 FUEL (item 8). Fuel at EAR #1 including the planned fuel onload. This fuel quantity must be sufficient to meet the fuel requirements of Section IV (EAR #2 to AAR #2 abort base, item 35) and Section V (Required fuel at EAR #2 prior to onload, item 47). (T-2)

11.6.9. Section II, EAR #1 TO AAR #1 ABORT BASE (See [Figure 11.4](#) for an example).

11.6.9.1. Complete to account for an unsuccessful fuel transfer for AAR #1. An abort base is required for all refueling tracks. The departure base may be used. The designated abort base must meet alternate airfield weather requirements. (T-2)

11.6.9.2. EN ROUTE (item 9). Time from EAR #1 to the abort base.

11.6.9.3. RESERVE (item 10). Combined total for item 5 plus item 10 should not exceed 1+00 Hrs. If the combined total exceeds 1 Hr, add only the balance for a total of 1 Hr in this block. Entry only required when the flight time from the EAR #1 to alternate exceeds 1+30. (T-2)

11.6.9.4. AAR #1 ABORT ALTERNATE (item 11). Optional entry.

11.6.9.5. HOLDING (item 12). Use 2,500 pounds if abort base is in Alaska, at latitudes greater than 59 degrees N/S, or no alternate is available. (T-2)

11.6.9.6. PLANNED RAMP FUEL (item 16). Must be sufficient to meet the requirements of (item 17, required ramp fuel) and the requirements of Section V fuel planning. (T-2)

11.6.9.7. REQUIRED RAMP FUEL (item 17). This only considers the fuel required to fly from departure to the EAR point and continue to the AAR abort base with required reserves, in the event of an unsuccessful fuel transfer during AAR #1. It includes fuel required to fly the entire air refueling track without a successful fuel transfer. It does not consider the planned ramp fuel needed to complete the fuel requirements to the AAR #2 abort base or the destination.

11.6.9.8. UNIDENTIFIED EXTRA (item 18). Does not need to meet the normal requirement (not to exceed 2,200 pounds), since item 8 (planned EAR #1 fuel) must be sufficient meet EAR #2 and AAR #2 abort base fuel requirements. If unidentified extra

fuel is excessive, consideration should be given to reducing the proposed ramp fuel and increasing the proposed AAR onload, if possible.

11.6.10. Section III, EAR #1 TO EAR #2.

11.6.10.1. EN ROUTE (item 20). Time and fuel from EAR #1 to EAR #2. Use the planned cruise profile for fuel calculations. (T-2)

11.6.10.2. IDENTIFIED EXTRA (item 21) Include 1,000 pounds per hour for the time anticipated at lower altitude on the track prior to and during actual air refueling for AAR #2. (T2)

11.6.10.3. RESERVE (item 23).

11.6.10.4. FUEL AT EAR #2, NO ONLOAD (item 25). The planned fuel at EAR #1 minus the fuel required to fly from EAR #1 to EAR #2. This calculated fuel quantity is compared to the required fuel at EAR #2 prior to onload (item 47) to confirm sufficient fuel planned through EAR #2.

11.6.10.5. PLANNED EAR #2 FUEL (item 26). Do not exceed the aircraft maximum gross weight limit established in the applicable flight manual. (T-2)

11.6.11. Section IV, EAR #2 TO AAR #2 ABORT BASE:

11.6.11.1. Complete to account for an unsuccessful fuel transfer for AAR #2. An abort base is required for all refueling tracks. The designated abort base must meet alternate airfield weather requirements. This section is similar to the calculations for Section II, EAR #1 to AAR #1 abort base. (T-2)

11.6.11.2. RESERVE (item 28). Combined total for item 23 plus item 28 should not exceed 1 Hr. If the combined total exceeds 1 Hr, add only the balance for a total of 1 Hr in this block. Entry only required when the flight time from the EAR #2 to abort base exceeds 1+30. (T-2)

11.6.11.3. PLANNED EAR #1 FUEL (item 34). Must be sufficient to meet the requirements of item 35 (REQUIRED EAR #1 FUEL) to satisfy the AAR #2 abort base fuel requirements in the event fuel is not unloaded during AAR #2. (T-2)

11.6.11.4. UNIDENTIFIED EXTRA (item 36). Does not need to meet the normal requirement (not to exceed 2,200 pounds), since item 26 (planned EAR #2 fuel) must be sufficient meet EAR #2 to destination and AAR #2 abort base fuel requirements in the event of no onload. If unidentified extra fuel is excessive, consideration should be given to reducing the proposed PLANNED EAR #1 fuel (item 8) and increasing the proposed AAR #2 onload, if possible.

11.6.12. Section V, EAR to DESTINATION (See [Figure 11.4](#) for an example).

11.6.12.1. Items separated by a diagonal (/) in this section are applicable to both single and double air refueling missions. The item letter or number after the diagonal (/) applies to double air refueling planning. Use the planned cruise profile for fuel calculations.

11.6.12.2. RESERVE (item 39). Ten percent of the Category I route from EAR #2 to destination, not to exceed 1 hour.

11.6.12.3. UNIDENTIFIED EXTRA (item 48). This calculation assumes you receive the planned fuel onload. Subtract fuel required at EAR #2 prior to onload (item 47) from the planned fuel at EAR #2 prior to onload (item 46). This value equals the extra fuel carried or additional fuel required (if negative) at the destination. When negative, additional fuel must be, added to the ramp fuel, available from the tanker, or in some situations may require moving one or both of the air refueling tracks. (T-2)

Figure 11.4. Example AF Form 4139 – Special Ops C-130 In-Flight Refueling Worksheet.

SPECIAL OPERATIONS C-130 INFLIGHT REFUELING WORKSHEET									
AIRCRAFT # 1056		(A) OPERATING WT: 115.0		(C) PLANNED ONLOAD AIR #1: 28.0		NOTES ASSOCIATED WITH SPECIFIC ITEM NUMBERS			
AIRCRAFT CONFIG: N/A		(B) PLANNED RAMP FUEL: 40.0		(D) PLANNED ONLOAD AIR #2: 15.0					
T.O. GROSS WT: (A+B-2) 153.3 / 0		FUEL PLAN, PAGE:		EAR #1 TO EAR #2					
TEMP DEV:		TIME		FUEL		FUEL PLAN, PAGE:		TIME	
1. ENROUTE		4+30		26.7		20. ENROUTE (EAR #1 TO EAR #2)		2+30 14.9	
2. TAXI & RUNUP				1.3		21. IDENTIFIED EXTRA		0 0.0	
3. IDENTIFIED EXTRA		0		0.0		22. BURN OFF (EAR #1 TO EAR #2)		14.9	
4. BURN OFF (T.O. TO EAR #1)				28.0		23. RESERVE (EAR #1 TO EAR #2)		1.1	
5. RESERVE (T.O. TO EAR #1)		0+18		1.5		24. TOTAL (22+23)		16.0	
6. TOTAL				29.5		25. FUEL AT EAR #2 (NO ONLOAD)		22.5	
7. FUEL AT EAR #1 (NO ONLOAD)				10.5		26. PLANNED EAR #2 FUEL (8-24)		37.5	
8. PLANNED EAR #1 FUEL				38.5		27. ENROUTE (EAR #2 TO ABORT BASE)			
9. ENROUTE (EAR #1 TO ABORT BASE)		0+15		1.2		28. RESERVE (EAR #2 TO ABORT BASE)		1.0	
10. RESERVE (EAR #1 TO ABORT BASE)		0+02		0.1		29. A/R #2 ABORT ALTERNATE		N/A	
11. A/R #1 ABORT ALTERNATE		N/A		0.0		30. HOLDING		2.5	
12. HOLDING				2.5		31. APPROACH / LANDING		5.0	
13. APPROACH / LANDING				5.0		32. IDENTIFIED EXTRA		0 0.0	
14. IDENTIFIED EXTRA		0		0.0		33. FUEL REQUIRED (EAR #2 TO ABORT BASE)		21.3	
15. FUEL REQUIRED (EAR #1 TO ABORT BASE)				8.8		34. PLANNED EAR #1 FUEL (27+28+29+30+31+32)		38.5	
16. PLANNED RAMP FUEL				40.0		35. REQUIRED EAR #1 FUEL (8)		37.3	
17. REQUIRED RAMP FUEL				38.3		36. UNIDENTIFIED EXTRA (24+33)		1.2	
18. UNIDENTIFIED EXTRA				1.7		37. REQUIRED OVERHEAD ABORT BASE (34-35)		7.5	
19. REQUIRED OVERHEAD ABORT BASE				7.5		38. REQUIRED OVERHEAD DESTINATION (40+41+42)		8.5	

11.7. Flight Charts.

11.7.1. Maintain a plotting chart showing flight progress on all Category I routes and tactical missions. The following information will be shown on the chart: (T-2)

11.7.1.1. NAV's name and coordinated universal date in the vicinity of departure or coast out point. Chart number, and chart edition will be annotated on the back of all stripped charts. Check the Chart Updating Manual (CHUM) on all charts (Global Navigation Chart (GNC), Jet Navigation Chart (JNC), etc.). CHUM information is not required on high-level charts. (T-2)

11.7.1.2. The flight plan centerlines and portions of ADIZ and FIR boundaries pertinent to the route. Label reporting points with proper names or geographical coordinates. Place the applicable portion of the "No Fly" line on all charts used for missions flown in the vicinity of unfriendly territory or other no-fly areas. Prominently mark warning and restricted areas within 25 nm of planned course and 3,000 ft of planned altitude on the chart (not required if a FLIP en route chart with this information is immediately available and used). Annotate airfields along the planned route which could serve as possible emergency landing areas. Consider the following factors when selecting emergency airfields: type aircraft, weather conditions, runway length, runway weight-bearing capacity, runway lighting, radio navigational aids, and proximity to planned flight path. (T-2)

11.7.1.3. Fixes or position plots and clearly designate time of each fix or position. Fixes or positions may be numbered and the corresponding numbers entered in the position column of the log instead of the geographical coordinates or descriptive position. (T-2)

11.7.1.4. Annotate the calculated ETP along the route if ETP is required for the mission. (T-2)

11.7.1.5. Annotate AAR abort point as described in [Paragraph 11.2](#) if applicable for the mission. (T-2)

11.7.2. In the interest of conservation, re-use flight charts for high level missions whenever this would not affect plotting accuracy of fixes or position determination. (T-2)

11.7.3. Approved laptop computers running a current version of Falcon View with appropriate chart coverage and chart scale may be used for tactical missions instead of paper charts. Required paper charts must be available should Falcon View not be accessible. (T-2)

11.8. In-Flight Procedures.

11.8.1. Communications & Radios. Monitor the primary command radio unless otherwise directed by the PIC. Record ATC clearances and monitor the read back. This includes all ATC instructions during departure, en route, and approach. This procedure is not required when ATC instructions require immediate execution by the pilot, or when such action interferes with the timely performance of other time-sensitive NAV duties. (T-2)

11.8.2. Departure and Approach Monitoring. Immediately after takeoff, cross-check available flight instruments with the airborne radar to ensure the aircraft remains clear of terrain and obstructions. During departure and arrival in IMC with airborne radar inoperative, use all available navigational aids to accurately position the aircraft. On all departures and arrivals, have the appropriate approach plate open to monitor course, timing,

and altitude. Backup the pilots and assist as necessary. Report any deviations immediately. Assist in clearing for other aircraft when possible. Confine activities to these critical duties during all departures and arrivals. (T-2)

11.8.2.1. To monitor aircraft on approaches and departures, the NAV will use a terrain chart in ONC, TPC, or JOG scale with current CHUM depicting all terrain and obstructions within 25 nm of the airfield terminal area. (T-2)

11.8.3. Flight Following. The NAV will flight follow on all missions using a suitable plotting chart (JNC, JNCA, or GNC). This is not required in the local flying area for Category II routes, pilot proficiency sorties, or tactical missions. (T-2)

11.8.4. Heading Deviation Checks. Heading deviation checks are not required on Category II routes or tactical missions. On Category I routes or route segments of 3 hours or longer, compute heading deviation for each compass system as soon as practical after initial level-off or coast-out. Record deviations for all compass systems. Use procedures in **Paragraph 11.13**. (T2)

11.8.4.1. On aircraft with reliable single INS or SCNS with a reliable INS, accomplish an initial heading deviation check to validate the INS heading. This can be accomplished by comparing the airfield diagram runway heading found in the approach plate and applying magnetic variation. (T-2)

11.8.4.2. A deviation check is not required on flights transiting Category I routes of less than 3 hours if: the aircraft is equipped with two or more operable heading systems (the standby compass is not considered a system for this requirement) and the difference between systems does not exceed 2 degrees.

11.8.5. TAS Checks. TAS checks are not required on Category II routes or tactical missions. Compute TAS check on all Category I routes of 3 hours or longer using procedures in **Paragraph 11.14**. Compute within 1 hour after reaching the initial cruise altitude. Aircraft without an operable or reliable air data computer or transducer will accomplish a TAS check after every change in altitude greater than 4,000 ft in addition to the initial TAS check. (T-2)

11.8.6. In-flight Fuel Management. Required for each flight over a Category I route when the flight time between LSAF and FSAF airfields is 4 hours or more. Record first entry upon level-off. Time between level-off entry and next entry may be up to 1 hour and 30 minutes, and no more than 1 hour each entry thereafter. Use the in-flight fuel management sections of the AF Form 4116 or AF Form 4139 when air-to-air refueling is performed. The NAV may terminate these procedures one hour from destination, when the Category I route segment is completed, or at the discretion of the PIC. See **Paragraphs 11.11** and **11.12** for procedures. (T-2)

11.8.6.1. Tactical and local training missions. NAVs will calculate a “Bingo” fuel that ensures the crew will have enough fuel to leave the operating area and return to the recovery airfield with the appropriate fuel reserves. If AAR is planned, NAVs will calculate a fuel requirement that ensures the crew will have enough fuel to leave the operating area, travel to and transit the planned AAR track, and return to the recovery/divert base with appropriate fuel reserves in the event AAR is unable to be completed. (T-2)

11.8.7. Fix Interval. NAVs will maintain a flight log on Category I routes of 3 hours or longer. Time between recorded fixes/positions will not exceed 1 hour. NAVs will periodically record spot readings between recorded fixes/position that include time of reading, aircraft heading, drift angle, GS, wind data, and TAS. Use procedures in **Paragraph 11.10**. Perform associated fix/position plotting on flight chart IAW **Paragraph 11.7.1.3**. (T-2)

11.8.8. ETP Calculations. Recompute the ETP when the actual arrival over any reporting point prior to the ETP exceeds 15 minutes ahead or behind time when the change was caused by erroneous wind information. If the change was caused by factors other than a change in the wind (slower TAS flown than planned, weather deviation, etc.), simply compute a new ETA to the ETP, as the ETP itself will not have changed. Follow procedures in **Paragraph 11.4**. (T-2)

11.8.9. Immediately report malfunctions or loss of navigational capability which will degrade course centerline accuracy to the air traffic control center. (T-2)

11.9. Laptop Computers. Laptop computers running Falcon View moving map software and connected to a handheld GPS may be used to provide in-flight situational awareness (SA). (T-2)

11.9.1. Laptop computers and handheld GPS will be used IAW AFI 11-202, Vol 3. (T-2)

11.9.2. NAVs will carry a handheld GPS unit on all Category I route sorties. (T-2)

11.9.3. Laptop computers with handheld GPS Falcon View moving map displays will not be used as the primary source of navigation. (T-2)

11.10. Flight Records. Use AF Form 4116, Section I, *Flight Data*, and Section IX, *In-Flight Data*. Record enough detail to reconstruct the mission. Units may publish their standards for log procedures in the unit supplement. This form will consist of planning and in-flight progress data. It will be completed in sufficient detail to fully evaluate or reconstruct the flight. See **Figure 11.6** and **Figure 11.7** for examples for completed AF Form 4116 Sections I and IX. (T2)

11.10.1. Flight Data. Section I of AF Form 4116 is used to record data for the planned route. A CFP with identical flight plan information may be used in lieu of manually entering data in Section I. The Flight Data areas are explained below.

11.10.1.1. Waypoint (WPT). Enter airport or NAVAID identifier, waypoint name, or leg number. The level-off line will be labeled as "L/O." If an alternate is required, record this line as "ALT" with flight data from planned recovery airfield to alternate airfield. (T-2)

11.10.1.2. TO. Enter coordinates for this waypoint. (T-2)

11.10.1.3. TAS/ALT. Planned true airspeed and altitude for the leg. Entry not required for climb-out and descent legs.

11.10.1.4. TC. Planned true course for the leg.

11.10.1.5. WV/DA. Planned winds and calculated drift angle for the leg.

11.10.1.6. TH, VAR, MH. Planned true heading, magnetic variance, and magnetic heading for the leg.

11.10.1.7. GS. Calculated groundspeed for the leg. Entry not required for climb-out legs.

11.10.1.8. ZONE DIST, TOTAL DIST. Distance for the leg and total distance from takeoff to that point.

11.10.1.9. ZONE TIME, TOTAL TIME. Time to fly that leg and total time from takeoff to that point.

11.10.1.10. ETA, ATA, A/B. Estimated time of arrival to the point, actual time of arrival to the point, and amount of time ahead or behind ETA once arriving to the point.

11.10.1.10.1. Revise ETAs in-flight for unexpected takeoff time, route diversions, or unexpected speed changes that cause significant ETA changes. (T-2)

11.10.2. In-flight Data. Section IX of the AF Form 4116 will be used to record present positions, spot readings, and construct dead reckoning (DR) plots if necessary. The following paragraphs describe each item on the log and procedures for using the log. (T-2)

11.10.2.1. Each item is described below.

11.10.2.1.1. Greenwich Mean Time (GMT). Time of recorded fix/position or DR plot.

11.10.2.1.2. POS. Position. Use “T/O” for takeoff, “A/H” for altered headings, triangles () for recorded fix/position, circles () for DR plots, and “LAND” for landing.

11.10.2.1.3. NAV DATA. Coordinates of position.

11.10.2.1.4. TC. True course.

11.10.2.1.5. WV/DC. Wind direction, velocity, and drift.

11.10.2.1.6. TH, VAR, MH. True heading, magnetic variance at that location, and magnetic heading.

11.10.2.1.7. DEV CORR. Deviation Correction. See [Paragraph 11.13](#) for heading deviation check procedures.

11.10.2.1.8. CH. Corrected heading. Apply DEV CORR to MH to calculate this heading. (T-2)

11.10.2.1.9. TAS. True airspeed at that time.

11.10.2.1.10. AD/GD/TIME. Air Distance, Ground Distance (GD), Time. AD not used. GD and TIME used only for DR plot lines. TIME is calculated by applying GS to the GD of the DR plot.

11.10.2.1.11. GS. GS at that time, or calculated for TAS against wind data for DR plot.

11.10.2.1.12. NEXT WPT. Next two waypoints on planned route.

11.10.2.1.13. DIST, TIME, ETA. Distance, time, and estimated time of arrival to next two waypoints.

11.10.2.1.14. TEMP/ALT. Outside air temperature and pressure altitude at that time.

11.10.2.2. As soon as practical after level-off or coast-out, whichever occurs latest, NAVs will verify aircraft position by either navigation aid fix or radar fix. (T-2)

11.10.2.2.1. Record the fix in AF Form 4116, Section VIII, *Radar/NAVAID Data*.

11.10.2.2.2. At the time of the fix, record the primary navigation solution and corresponding deltas for all other navigation solutions in AF Form 4116, Section VI, *Fix/Computer Position*. (T-2)

11.10.2.2.3. After the coast-out, record, at a minimum, GMT, present position, true heading, spot wind data, TAS, altitude, and ETA to the next waypoint in AF Form 4116, Section IX, *In-Flight Data*. (T-2)

11.10.2.3. After coast-out, recorded fix/position intervals will be no more than 1 hour IAW **Paragraph 11.8.7**. (T-2)

11.10.2.3.1. Record the GMT, current position of the primary navigation system, true heading, spot wind data, TAS, altitude, ETA to the next waypoints, and corresponding deltas for all other navigation solutions. (T-2)

11.10.2.4. Between recorded fixes/positions, periodically record spot readings at regular intervals to allow for calculating a DR plot in the event of a navigation system failure. Spot readings will include time of reading, aircraft heading, drift angle, GS, wind data, and TAS. (T2)

11.10.2.5. As soon as practical prior to coast-in, NAVs will verify aircraft position by either navigation aid fix or radar fix. (T-2)

11.10.2.6. In the event of a navigation system failure (INS or GPS) full log procedures will be implemented. Beginning at the last plotted position, compute a DR plot up to the present position. Plot a fix/position at a minimum of once per hour. A DR plot associated with the fix/position will be plotted on the chart prior to plotting the position. If the navigation system failure is resolved, the NAV may resume log procedures as outlined in **Paragraph 11.10.2**. (T2)

11.10.2.7. Course Deviations. If deviating from planned course for weather or directed by ATC, at a minimum, record the aircraft position and spot data when initially deviating from course. Unless other action is required, record this information again at the approximate farthest point away from course during deviation prior to returning to course. (T-2)

11.10.2.8. In Section IX, *In-flight Data* of the AF Form 4116, deviations may be recorded as an altered heading line (documented as "A/H"). If unable to maintain log due to weather avoidance, the NAV may write "WEATHER DEVIATIONS" on the line after the previous recorded fix/position data line. Once clear of weather and heading back to planned course or on course, resume AF Form 4116 entries as required. (T-2)

11.10.2.9. Clearance/Remarks. Enter ATC clearances as discussed in **Paragraph 11.8.1**. When practical, record assigned ATC frequencies on departure and approach in this section. Use this section to record other pertinent flight information as required. (T-2)

11.10.2.10. RADAR/NAVAID Data. Use Section VIII of the AF Form 4116. Use this section to record actual and corrected readings (if applicable). Compare Doppler, INS,

SCNS, and GPS positions (latitude and longitude, or distance-to-go and cross track) for each position fix. At minimum, record the integrated navigation solution. If a navigation solution is updated, record its incorrect position and show that it was updated (in the remarks section). Fix data substantiated by ICAO identifier or coordinates in the position block on the actual side of the AF Form 4116 need not be duplicated in this section. See [Figure 11.5](#) for an example of this section. (T-2)

Figure 11.5. AF Form 4116 - & VIII, Fix Positions & NAVAID Data.

VI. FIX/COMPUTER POSITION				VIII. RADAR/NAVAID DATA				
TIME	GPS/SCNS	INS	DVS	TIME	STATION	READING	CORR	CORR READING
1620	N30-32.3 W81-32.3	N30-32.9 W81-31.5		1620	NRB	329/09	-3W	326/09
1650	N30-51.7 W79-32.5	N30-52.1 W81-32.1		1920	BDA	281/66	-15W	266/66
1720	N31-12.8 W77-13.0	N31-13.0 W77-12.5						
1740	N31-22.8 W76-00.0	N31-23.2 W75-59.2						
1840	N31-52.4 W71-15.9	N31-53.9 W75-14.9						
1920	N32-17.1 W66-00.9	N32-18.2 W65-58.9						

[illegible]

Note: This is an example of a route from KHRT to TXKF, an island destination. A notional airfield (KZZZ) was added to this flight plan to show an example of an alternate (ALT) line.

IX. IN-FLIGHT DATA																								
CLEARANCE/REMARKS: T/O Rwy 36, left turn to 200 up to 1500 ft, expect 15000 ft 10 minutes later, sqwauk 4441, contact departure on 360.6 Climb to 15K, turn to 045 to intercept flight planned route, contact JAX center on 346.4 / JAX altimeter 29.95																								
GMT	POS	NAV DATA	TC	WV DC	TH	VAR	MH	DEV CORR	CH	TAS	AD/GD TIME	GS	NEXT WP	DIST	TIME	ETA	TEMP ALT	NAV DATA/REMARKS						
																		TIME	HDG	DA/GS	WV	TAS		
1500														CEW	24	+08	1508	Down°	1630	097	-3/244	180/10	245	
														DEFUN	53	+17	1517	Up	1635	142	0/238	180/12	244	
1620	Δ	N30 32.3	097	180 10										Wpt 6	210	+52	1712	5°	1645	045	-1/245	178/10	240	
		W081 32.3		-2	095	3W	098	0	098	245		244	Buritt	440	1+48	1808	15000M	1700	100	-3/244	182/12	245		
1650	○		097	180 10							122						5°	1715	100	-3/240	182/12	243		
				-2	095	3W	098	0	098	245	+30	244					15000M	1800	100	-2/245	181/09	245		
1630	A/H	ATC	140	180 10													5°	1815	098	-1/245	177/07	246		
		Vector		-1	139	4W	143	0	143	245		245					15000M	1830	096	-1/245	177/10	246		
1640	A/H	ATC	043	180 10								244					5°	1850	097	-1/245	185/07	244		
		Vector		-1	042	5W	047	0	047	245							15000M							
1650	Δ	N30 51.7	095	180 10									Wpt 6	100	+24	1711	5°							
		W079 32.5		-2	093	5W	098	0	098	245		245	Buritt	330	1+21	1811	15000M							
1720	○		097	180 10							123						5°							
				-2	095	4W	099	0	099	245	+30	245					15000M							
1720	Δ	N31 12.8	095	180 10									Buritt	205	+50	1810	5°							
		W077 13.0		-2	093	5W	098	0	098	245		244	Wpt 8	440	1+48	1908	15000M							
1720									WEATHER DEVIATIONS															
																	M							
1740	Δ	N31 22.4	097	180 10									Buritt	144	+35	1815	5°							
		W076 00.0		-2	095	4W	099	0	099	245		245	Wpt 8	381	1+33	1913	15000M							
1840	○		097	180 10								245					5°							
				-2	095	4W	099	0	099	245	1+00													

11.11. AF Form 4116 In-flight Fuel Management. Use Section VII of the AF Form 4116. In-flight fuel management may be accomplished using the actual in-flight engine burn rates. Using

the actual in-flight burn rate method will produce an acceptable error, in that projected current four engine burn rates will lower as gross weight decreases and power is reduced to maintain a constant TAS. Block entries are as follows:

11.11.1. ETA DESTINATION. Revised ETA at destination/EAR.

11.11.1.1. NAVs may use flight plan generated by MCs to update ETAs. Also, laptops with current version of PFPS may be used to update ETAs. NAVs should update paper log in the event either of these options are unavailable.

11.11.2. TIME. Record the departure time, level off time, and subsequent reading times. Time intervals between readings will be done IAW **Paragraph 11.8.6**. Typically, column 1 will be the takeoff entry and column 2 will be the level-off entry.

11.11.3. TERM FUEL FLOW. Terminal Fuel Flow.

11.11.4. FUEL FLOW. Fuel burn rate at time of reading.

11.11.5. AVG FUEL FLOW. Calculate by adding TERM FUEL FLOW and FUEL FLOW and dividing the sum by 2.

11.11.6. FUEL REMAINING. Fuel quantity at time of reading.

11.11.7. MIN DIV/REQ OVHD. Required fuel overhead (item 13 of the AF Form 4116 Fuel Plan).

11.11.8. DIFFERENCE. Subtract MIN DIV/REQ OVHD from FUEL REMAINING.

11.11.9. FUEL ETE. This is the DIFFERENCE converted to time. Calculate by dividing DIFFERENCE by AVG FUEL FLOW.

11.11.9.1. The NAV may choose to calculate FUEL ETE by dividing DIFFERENCE by FUEL FLOW (current burn rate) instead of using AVG FUEL FLOW. This will produce a more conservative FUEL ETE.

11.11.10. ETE DESTINATION. Estimated Time En route to destination. Subtract TIME from ETA DESTINATION.

11.11.11. EXTRA TIME. Subtract ETE DESTINATION from FUEL ETE. Report this value to the pilot. If this is a negative value, check the computation and values for errors. If they are correct, evaluate destination options.

Figure 11.8. Example AF Form 4116 - Section VII, In-Flight Fuel Management.

VII. IN-FLIGHT FUEL MANAGEMENT									
	1	2	4	5	6	7	8	9	10
ETA DESTINATION	T/O	2000	2005	2010	2005				
TIME	1530	1550	1700	1800	1900				
TERM FUEL FLOW	5.6	5.6	5.6	5.6	5.6				
FUEL FLOW		6.2	6.0	5.9	5.8				
AVG FUEL FLOW		5.9	5.8	5.7	5.7				
FUEL REMAINING	38.0	35.5	28.5	22.6	16.9				
MIN DIV/REQ OVHD		10.0	10.0	10.0	10.0				
DIFFERENCE		25.5	18.5	12.5	6.9				
FUEL ETE		4+10	3+11	2+12	1+12				
ETE DESTINATION		4+10	3+05	2+10	1+05				
EXTRA TIME		0+00	0+06	0+02	0+07				

11.12. AF Form 4139 In-Flight Fuel Management. Use the reverse side of AF Form 4139, *Special Operations C-130 Air Refueling In-flight Management*, for manual in-flight fuel management on missions incorporating one or two air-to-air refuelings. Using the actual in-flight burn rate method will produce acceptable error in that projected current four engine burn rates will lower as gross weight decreases and power is reduced to maintain a constant TAS. The TAKEOFF TO EAR #1 and TAKEOFF TO AAR #1 ABORT BASE sections are applicable to both single and double air refueling missions, while the EAR #1 TO EAR #2 and EAR #1 TO AR #2 ABORT BASE sections only apply to missions requiring two air-to-air refuelings. For all air-to-air refueling missions, use the AF Form 4116 Fuel Management section after completing the last air-to-air refueling. The GROSS WEIGHT and PAGE # blocks are not required. The NAV may use one of these blocks to record current fuel flow. All other entries on the form are self-explanatory except for the following: (T-2)

11.12.1. From takeoff to End AAR #1 simultaneously work two en route fuel management solutions, Takeoff to EAR #1 to ensure proper en route fuel management to continue the mission, and Takeoff to AAR #1 Abort Base to ensure sufficient fuel in the event of a missed AAR. (T-2)

11.12.2. From End AAR #1 to End AAR #2 simultaneously work two en route fuel management solutions, End AAR #1 to EAR #2 to ensure proper en route fuel management, and EAR #1 to AAR #2 Abort Base to ensure sufficient fuel in the event of a missed AAR for refueling number 2. These two sections are only applicable to missions requiring two air refuelings. (T-2)

11.12.3. Use the AF Form 4116 fuel management section for EAR to destination using item 49 for the O/H Fuel entry. (T-2)

11.12.4. TAKEOFF TO EAR #1 section.

11.12.4.1. EAR #1 FUEL, No Onload (47 / 7). Use item 47 for single AR missions, and item 7 for double AAR missions. (T-2)

11.12.4.2. AAR #1 ADJUST (3). Include only that portion of the fuel in Item 3 used to compensate for additional time on the refueling track, computed at 1,000 pounds per hour. (T-2)

11.12.4.3. ETE TO EAR #1. RETA to EAR #1 minus the TIME of the fuel data.

11.12.5. TAKEOFF TO AAR #1 ABORT BASE section.

11.12.5.1. This section need not be completed if Item 18 on the front of the form exceeds 4,000 pounds.

11.12.5.2. REQD OVERHEAD ABORT BASE #1 (19). The sum of the fuel required for the abort alternate, holding, and approach and landing.

11.12.5.3. AAR #1 ADJUST (3). Include only that portion of the fuel in Item 3 used to compensate for additional time on the refueling track, computed at 1,000 pounds per hour.

11.12.6. EAR #1 TO EAR #2 section.

11.12.6.1. AAR #2 ADJUST (21). Include only that portion of the fuel in Item 21 used to compensate for additional time on the refueling track, computed at 1,000 pounds per hour.

11.12.6.2. ETE TO EAR #1. RETA to EAR #2 minus the TIME of the fuel data.

11.12.7. EAR #1 TO AR #2 ABORT BASE section.

11.12.7.1. This section need not be completed if Item 36 on the front of the form exceeds 4,000 pounds.

11.12.7.2. REQD OVERHEAD ABORT BASE #2 (37). The sum of the fuel required for the abort alternate, holding, and approach and landing.

11.12.7.3. AAR #2 ADJUST (21). Include only that portion of the fuel in Item 21 used to compensate for additional time on the refueling track, computed at 1,000 pounds per hour. (T-2)

11.12.8. From End AAR #2 to destination use standard AF Form 4116 in-flight fuel management procedures. (T-2)

Figure 11.9. Example AF Form 4139 – Air Refueling In-Flight Fuel Management.

SPECIAL OPERATIONS C-130 AIR REFUELING INFLIGHT FUEL MANAGEMENT									
NOTE: USE THE FLIGHT PLAN AND NAVIGATION LOG: FUEL MANAGEMENT SECTION FROM EAR TO DESTINATION USING ITEM 49 FROM THIS WORKSHEET FOR OIH FUEL ENTRY.									
TAKEOFF TO EAR #1					EAR #1 TO EAR #2				
RETA TO EAR #1	1430	1430			RETA TO EAR #2	1700	1700		
TIME		1130	1230		TIME		1500	1600	
TEMP DEV					TEMP DEV				
GROSS WEIGHT		6.0	6.0		GROSS WEIGHT		6.0	6.0	
PAGE #					PAGE #				
FUEL REMAINING		32.0	26.0		FUEL REMAINING		37.9	31.9	
(-) EAR #1 FUEL (NO ONLOAD) (47/7)		12.5	12.5		(-) EAR #2 FUEL (PRIOR TO ONLOAD) (47)		22.9	22.9	
DIFFERENCE		19.5	13.5		DIFFERENCE		15.0	9.0	
(-) A/R #1 ADJUST (3)		0.0	0.0		(-) A/R #2 ADJUST (21)		0.0	0.0	
USABLE FUEL		19.5	13.5		USABLE FUEL		15.0	9.0	
ADJUSTED FUEL ETE		3+15	2+15		ADJUSTED FUEL ETE		2+30	1+30	
(-) ETE TO EAR #1		3+00	2+00		(-) ETE TO EAR #2		2+00	1+00	
TIME DIFFERENCE		+15	+15		TIME DIFFERENCE		+30	+30	
ADDITIONAL ONLOAD (IF REQ'D) @ 5000 LBS / HR, FOR A/R #1					ADDITIONAL ONLOAD (IF REQ'D) @ 5000 LBS / HR, FOR A/R #2				
TAKEOFF TO A/R #1 ABORT BASE					EAR #1 TO A/R #2 ABORT BASE				
RETA TO EAR #1 ABORT BASE		1500	1500		RETA TO A/R #2 ABORT BASE		1915	1915	
TIME		1130	1230		TIME		1500	1600	
TEMP DEV					TEMP DEV				
GROSS WEIGHT		6.0	6.0		GROSS WEIGHT		6.0	6.0	
PAGE #					PAGE #				
FUEL REMAINING		32.0	26.0		FUEL REMAINING		37.9	31.9	
(-) REQD OVERHEAD ABORT BASE #1 (19)		9.5	9.5		(-) REQD OVERHEAD ABORT BASE #2 (37)		9.5	9.5	
DIFFERENCE		22.5	16.5		DIFFERENCE		28.4	22.4	
(-) A/R #1 ADJUST (3)		0.0	0.0		(-) A/R #2 ADJUST (21)		0.0	0.0	
USABLE FUEL		22.5	16.5		USABLE FUEL		28.4	22.4	
ADJUSTED FUEL ETE		3+45	2+45		ADJUSTED FUEL ETE		4+44	3+44	
(-) ETE TO EAR #1 ABORT BASE		3+30	2+30		(-) ETE TO EAR #2 ABORT BASE		4+15	3+15	
TIME DIFFERENCE		+15	+15		TIME DIFFERENCE		+29	+29	

11.13. Heading Deviation Check Procedures.

11.13.1. Cross-check all available heading references (INS/Mission Computer) with actual magnetic variation to arrive at the magnetic course. Use AF Form 4116, Section V, *Deviation Check*. Block entries as follows: (T-2)

11.13.1.1. TIME. Time of reading. Aircraft should be on a stable heading (not in a turn).

11.13.1.2. TH (INS). True Heading from INS currently providing heading information to the navigation solution.

11.13.1.3. MAG VAR. Magnetic variance at location of reading. Use magnetic variance from FLIP en route charts or current Falcon View data.

11.13.1.3.1. If aircraft navigation system is loaded with current magnetic variance data, those numbers may be used in lieu of using charts or Falcon View data.

11.13.1.4. MAG HDG. Magnetic heading calculated by applying MAG VAR to TH at time of reading.

11.13.1.5. DEV. Deviation. Difference between Compass Headings (below) and Magnetic Heading.

11.13.1.6. NO 1 CH, NO 2 CH, STBY CH. Compass readings from respective compass systems.

11.13.1.7. COMPUTER. Not required.

11.13.1.8. Celestial heading checks are not required on the AC-130W.

Figure 11.10. Example AF Form - 4116 Deviation Check.

V. DEVIATION CHECK				
	1	2	3	4
TIME	1530			
TH (INU)	092.0			
MAG VAR	2W			
MAG HDG	094.0			
DEV	+1.0			
NO. 1 CH	095.0			
DEV	-1.0			
NO. 2 CH	093.0			
DEV	+1.5			
STBY CH	095.5			
DEV				
COMPUTER				

11.14. TAS Check Procedures.

11.14.1. TAS Checks. The purpose of the TAS check is to ensure the air data computer (ADC) is computing a proper calibrated airspeed/TAS and temperature. Use AF Form 4116,

Section IV. Heat of Compression and Standard Temperature tables are included on the form. Block entries are as follows: (T-2)

11.14.1.1. TIME. Time of reading. Aircraft should be at a stable cruise airspeed.

11.14.1.2. ALT. Pressure Altitude at time of reading. Set 29.92 in altimeter (for reading only).

11.14.1.3. IOAT. Indicated outside air temperature. Apply Heat of Compression numbers to get Total Outside Air Temperature (TOAT). Record TOAT in this block next to IOAT. (T-2)

11.14.1.4. IAS, CAS, EAS, TAS. Use the ICE-T method in AFPAM 11-216, *Air Navigation*, to convert indicated airspeed (IAS) to TAS. Use the appropriate flight performance manual for airspeed corrections. On aircraft with TAS displays from operable air data computers/transducers (ADCs/ADTs), enter only the displayed TAS value. Where two values are displayed from different ADCs/ADTs, enter the average of the two values. (T-2)

11.14.1.5. ITAS. Indicated TAS from ADC. Read directly from the true airspeed gauge.

11.14.1.6. CORR. Correction to ITAS. Subtract ITAS from TAS.

11.14.1.7. COMP TAS. Not required.

Figure 11.11. Example AF Form 4116 - Section (TAS Check).

IV. TAS CHECK					STANDARD TEMPERATURES	ALT	TEMP	ALT	TEMP	ALT	TEMP	ALT	TEMP	ALT	TEMP
	1	2	3	4		110	-7	160	-17	210	-27	260	-37	310	-46
TIME	1530					120	-9	170	-19	220	-29	270	-39	320	-48
ALT (PA) 29.92	15000					130	-11	180	-21	230	-31	280	-41	330	-50
IOAT / TOAT	-6 / -12					140	-13	190	-23	240	-33	290	-43	340	-52
IAS	189					150	-15	200	-25	250	-35	300	-44	350	-54
CAS	190														
EAS (-2<270<-3)	188				HEAT OF COMPRESSION	TAS		TEMP		TAS		TEMP			
TAS	239					190 - 210		-4		277 - 288		-9			
- ITAS	240					210 - 230		-5		288 - 300		-10			
CORR	-1					230 - 246		-6		300 - 310		-11			
-COMP TAS						246 - 263		-7		310 - 319		-12			
						263 - 277		-8		319 - 325		-13			

11.15. SCA Construction. Use the most current sources for topological, point obstruction, and airfield information. Consider using existing airfield NAVAIDS to increase the reliability of the approach. (T-2)

11.15.1. Obstacle Clearance. The location of terrain and obstructions will dictate the glide slope and altitude profile used. Draw the horizontal obstacle clearance template, depicted in **Figure 11.12**, on a 1:250,000 or larger scale chart, if available. The template begins 0.3 nm either side of runway centerline at the touchdown point, extending outward to 1 nm either side of centerline at 3 nm from the touchdown point. The template will encompass all terrain 1 nm either side of centerline from the planned descent point extending to 1 nm beyond the planned descent point (For example, a 3.2 nm planned descent point requires a 4.2 nm long template). If the planned descent point is less than 2 nm from the touchdown zone, then the standard 3 nm template will not require extension. Refer to **Figure 11.13**, SCA Horizontal Obstruction Template (Example). (T-2) **Note:** These are minimum distances and may be

increased. Consider such factors as the availability of radar or EO/IR targets recent NAVAID performance, and time of last navigation system/computer update.

11.15.2. Significant and critical obstacles. Using current large-scale charts, airfield diagrams, airfield sketches, approach plates, and imagery, locate significant obstacles within the boundary of the horizontal template. Significant obstacles are those within 300 ft of the desired glide slope. Determine the HAT for each obstacle by subtracting TDZE from the mean sea level (MSL) elevation of the obstacle. For each obstacle, plot the along-course distance from touchdown and HAT on the critical obstacle graph as shown in **Figure 11.14. Critical Obstacle Chart**. An obstacle is considered critical if it falls above the reference line for the planned glide slope or its extension along the depicted baseline. (T-2)

11.15.2.1. For each critical obstacle identified, preplan and brief a specific means of avoidance to be used during the approach. The following examples may be used separately or in combination: (T-2)

11.15.2.1.1. Use a steeper glide slope. Glide slopes exceeding 4.0° should be carefully considered due to the high rate of descent required.

11.15.2.1.2. Move the touchdown point further down the runway.

11.15.2.1.3. Increase MDA.

11.15.2.1.4. Establish an intermediate step-down altitude above the MDA at which the aircraft will level off until positive separation from the obstacle is assured.

11.15.2.1.5. Change the approach to the opposite end of the runway, crossing runway, parallel runway, etc.

11.15.2.2. Draw the relative position of each critical obstacle on the template and annotate its distance-to-go, distance abeam final course centerline, and height (AGL and MSL). (T-2)

Figure 11.12. SCA Horizontal Obstruction Clearance Template.

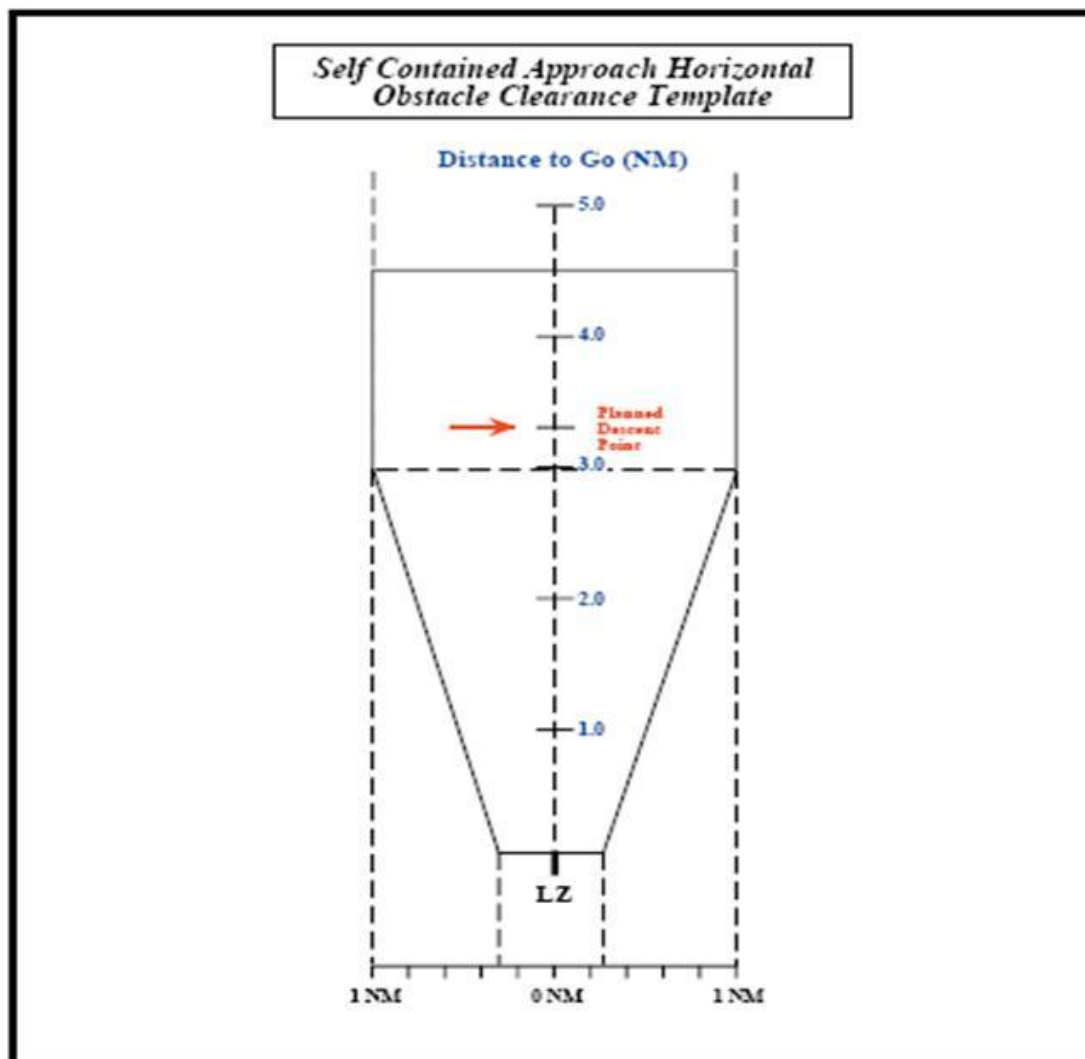


Figure 11.13. SCA Horizontal Obstruction Clearance Template (Example).

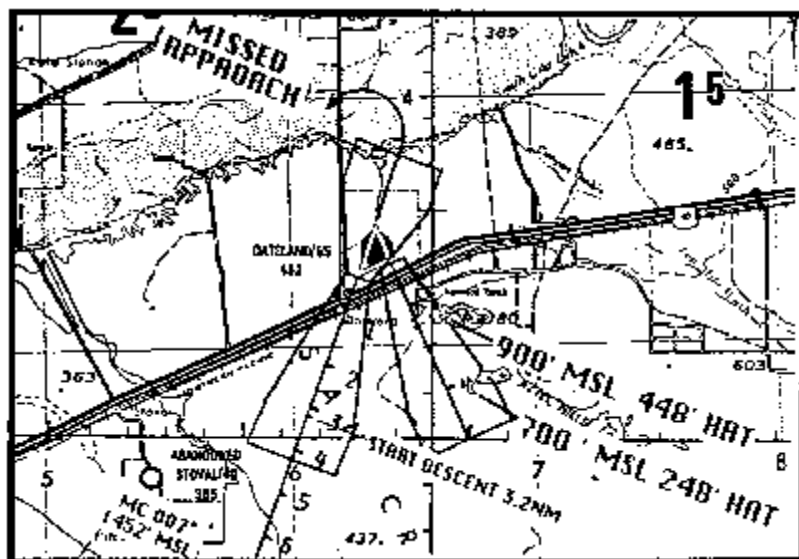
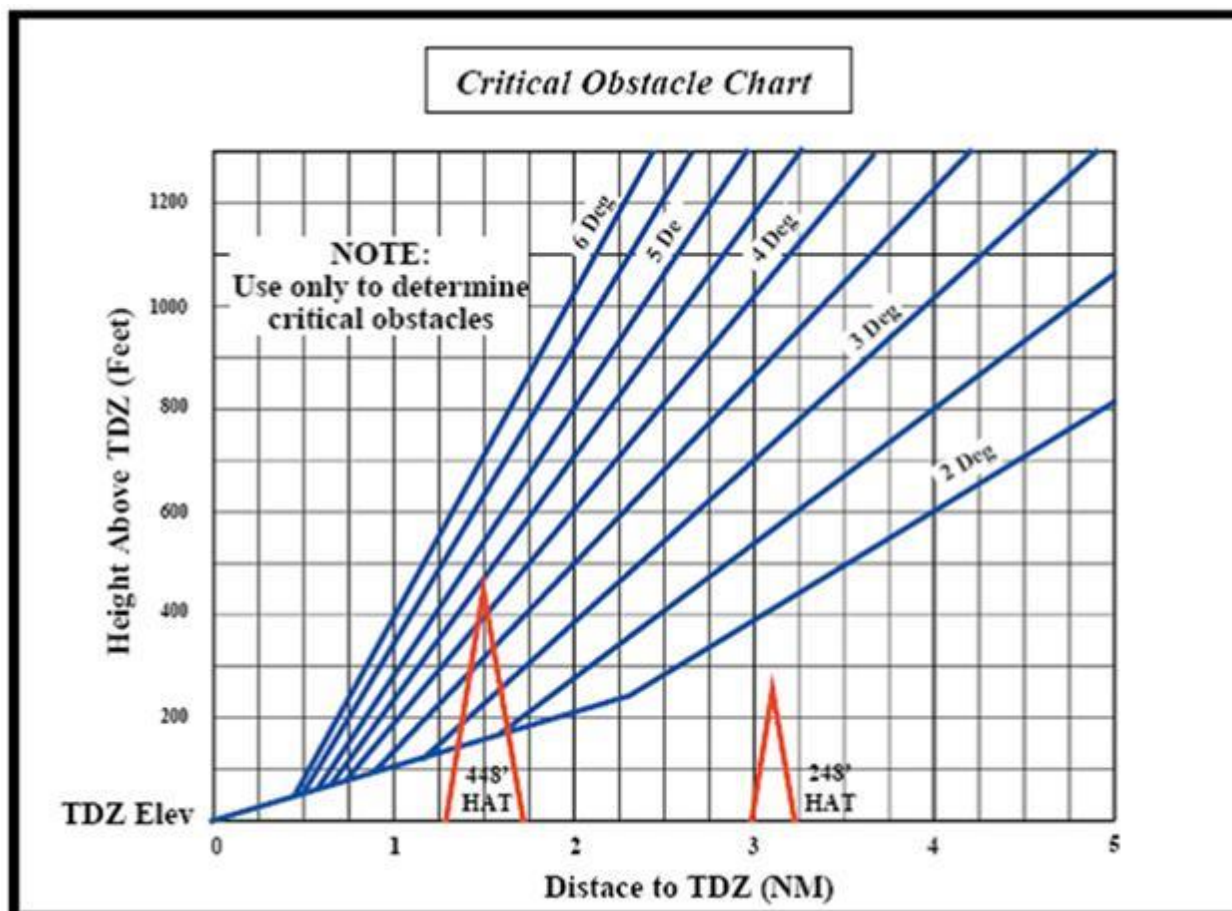


Figure 11.14. Critical Obstacle Chart.



11.15.3. Missed Approach and Departure. For planning, allow a minimum of 0.3 nm along track error and 0.3 nm cross track error at the MAP. Assume IMC when choosing the missed approach/departure flight path. Construct a horizontal obstacle clearance template beginning at the MAP and incorporating the planned missed approach/departure flight path. Use TDZE as the MSL start point for the missed approach. If the terrain along this flight path (including the above errors) rises at a rate greater than 200 ft/nm, refer to the performance manual to verify that three-engine climb out will clear terrain. Use the three-engine climb angle in place of glide slope (refer to formula in [Table 11.2](#)). (T-2)

Table 11.2. Example Horizontal Obstacle Clearance Formula.

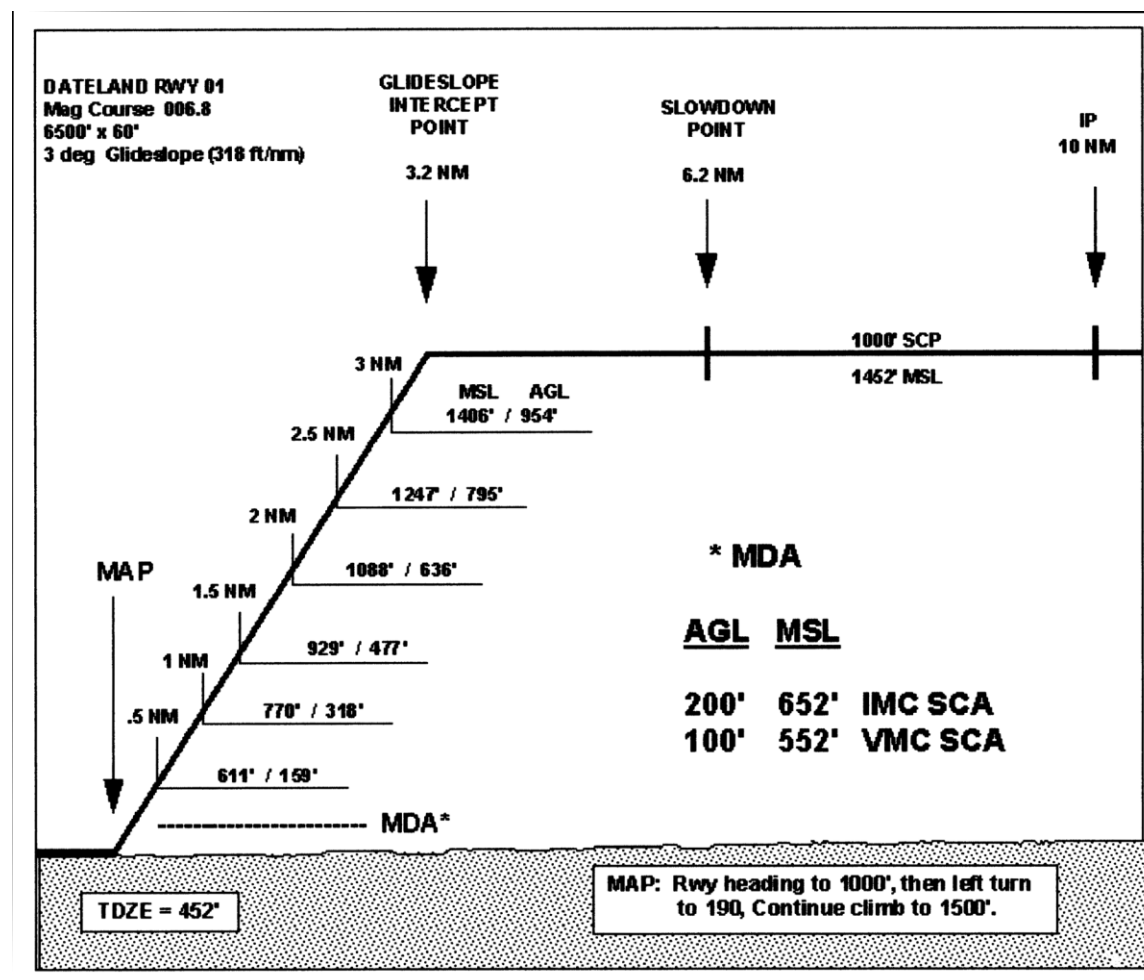
$\text{Angle of Climb} = \text{Rate of Climb (ft/min)} \times 0.5652 \text{ GS (knots)}$

11.15.3.1. The horizontal obstacle clearance template for climb out extends from the approach end of the runway out to 1.0 nm past level off at the initial escape en route altitude. The lateral limits of the climb out template are the same as for the straight-in approach. (T-2)

11.15.3.1.1. If any critical obstacles are identified, consider using turns during climb out to avoid them. Ensure that the three-engine climb path provides sufficient clearance from obstacles and terrain along the flight path. (T-2)

11.15.4. SCA Vertical Template Construction. Starting at the touchdown zone, construct a glide slope using the desired gradient (ft/nm) to a point along the final approach course (or transition path, if applicable) where it intercepts the planned approach altitude (refer to [Figure 11.15](#)). Annotate the glide slope MSL and AGL altitudes for each 0.5 nm distance-to-go increment out to the planned descent point. (T-2)

Figure 11.15. SCA Vertical Template.



Chapter 12

FLIGHT ENGINEER PROCEDURES AND FORMS

12.1. General. In addition to the duties listed in the flight manual, other applicable technical orders, and this instruction, the PIC may assign other duties to the FE, as necessary. Except for ferry flights, hostile environment repair, and C-130 operations with suspected fuel tank foam fires these items need not be briefed and will be performed as normal procedures. (T-2)

12.2. Fuel Management. In order to comply with the intent of Primary Fuel Management and provide the greatest flexibility for maintenance and operations, standard ramp fuel loads in excess of 30,000 pounds should be loaded as follows:

12.2.1. Outboard main tanks. 7,800 pounds each is the minimum to be considered full.

12.2.2. Inboard main tanks. 7,200 pounds in each tank is the minimum to be considered full.

12.2.3. Operational commitments, availability of fuel services, or planned landing criteria will in some cases, dictate that these procedures be adjusted; however, every effort should be made to comply with these guidelines and the flight manual to maximize airframe life.

12.3. Forms Management. In addition to the procedures in TO 00-20-1 and AFI 11-401, the flight engineer will assist the PIC in maintaining the AFTO Form 781 series. Verify the exceptional release is signed before starting engines and resigned, if necessary, at en route stops. (T-2)

12.3.1. After each flight, ensure the number of landings, flight duration time(s), etc., are entered on the AFTO Form 781H. Review all AFTO Form 781A discrepancies and ensure clear, detailed entries are made, symbols, and date discovered, are entered for each discrepancy and the discovered blocks are annotated appropriately. (T-2)

12.4. Flight monitoring. The flight engineer will monitor aircraft systems during all phases of flight and ground operations. Notify the PIC of all abnormal indications and take appropriate action. (T-2)

12.4.1. Maintain outside vigilance when flight deck duties allow. (T-2)

12.4.2. Monitor the primary radio, interplane radio, and interphone Net. (T-2)

12.4.3. Advise and assist the pilot in maintaining required climb and cruise power. (T-2)

12.4.4. State “17,000” over interphone when any engine torque approaches this value. (T-2)

Note: In the event of an inadvertent over-torque, refer to **Table 12.1**. Carefully consider the over-torque actions criteria in order to determine mission impact. (T-2)

Table 12.1. Over-Torque Actions.

Torque Reading (in-lbs.)	Required Actions
19,600 – 21,500	781A Entry. Historical tracking only. No inspection required.
21,500 – 23,000	781A Entry. Visual inspection within 25 flight hours.

Over 23,000	781A Entry. Maintenance required for NDI and engine mounts change within 25 flight hours. Mag plug check. Reduction Gearbox may require change if gearbox oil pressure is lower than before over-torque.
<p>WARNING: Failure to comply with these criteria could result in catastrophic structural failure.</p> <p>Note: The 25-flight hour limit is based on flight time to return the aircraft for maintenance. AFSOC aircraft that experience an over-torque over 23,000 in-lb are to immediately return the aircraft for inspection and required maintenance.</p>	

12.4.5. Notify the pilot when either of the following conditions is noted: (T-2)

12.4.5.1. Deviation of more than 200 ft from assigned altitude.

12.4.5.2. The aircraft configuration is incorrect for the maneuver being performed.

12.5. Prestrike/Poststrike Checklists. When the Prestrike checklist is initiated, ensure the aircraft is configured to enter the combat environment. When the Poststrike checklist is initiated, ensure the aircraft is configured properly (tactical environment permitting) for recovery to the landing airfield. (T-2)

12.6. AF Form 4064, C-130 TOLD Card:

12.6.1. Complete TOLD card for takeoff prior to the BEFORE STARTING ENGINES CHECKLIST. (T-2)

12.6.2. Complete data applicable to the type of takeoff and landing to be made (i.e., landing distance for normal landing). (T-2)

12.6.3. Record computed data in accordance with the flight/performance manual and this instruction. (T-2)

12.6.4. Base all performance data on 95 percent engine efficiency unless mission requirements dictate otherwise. Calculate an additional torque value based on 100 percent engine efficiency so you can identify the actual efficiency of the engines when setting takeoff power. Do not accept an engine that produces less than 95 percent efficiency. (T-2)

12.6.5. TOLD card computations will be accomplished using the appropriate performance manual, approved tabulated data, or approved TOLD Computer. (T-2)

12.6.6. Record adjusted speeds to be used. For example, record minimum control speed (one engine inoperative in ground effect) as takeoff speed if minimum control speed is higher than computed takeoff speed. (T-2)

12.6.7. Computed data must equal or exceed the requirements of this instruction. (T-2)

12.6.8. Following initial takeoff and landing recalculate affected speeds if favorable conditions afford an additional margin of safety in all other areas (e.g., gross weight decreases due to fuel burn off, while pressure altitude and temperature remain constant). New data is required for pressure altitude changes of 1,000 ft, gross weight changes of 5,000 pounds, or temperature change of 5°C. (T-2)

12.6.9. The minimum TOLD card computations (airspeeds) required for a termination landing are: Air Minimum Control Speeds, Obstacle Clearance Speed, 3-Engine Climb Speed, 100 & 50% Flap Landing Speeds and Distances, 0% Flap Landing Approach Speed (Night or IMC), and 3 Eng ft per nautical mile. (T-2)

12.6.10. AF Form 4063, Pilot Information Card. OG/OGV is authorized to approve overprinting the blank blocks of the AF Form 4063, Pilot Information Card (Mini TOLD Card). Submit information copies to HQ AFSOC/A3V upon approval. (T-3)

12.6.11. When practicing no-flap landings, compute both Air Minimum Control Speed (Vmca) for 50 percent flaps and for no flap configuration (low rudder boost). Record both sets of speeds on the TOLD card. (T-2)

12.6.12. When cruise time will exceed 4 hours, the flight engineer will post applicable cruise data 1 hour after the start of the cruise. Cruise data will be updated hourly. Always have 2 and 3 engine service ceiling readily available. (T-2)

12.7. Aircraft Structural Integrity Program. Complete the applicable C-130 flight data worksheet and enter data IAW TO 1C-130-101 into AIRCAT web base immediately following the flight or within 3 duty days if a delay is unavoidable. (T-2)

12.8. Aircraft Fuel Usage.

12.8.1. Responsibility. The flight engineer will coordinate fuel usage/management with the NAV when the flight requires the completion of the AF IMT 4116, *C-130 Flight Plan and Record*. (T-2)

Chapter 13

AERIAL GUNNER PROCEDURES

13.1. General. On AC-130W aircraft the AG crew position is filled by Special Mission Aviators (AFSC 1A9X1) and perform multiple types of duties on the aircraft traditionally associated with an AG and aircraft loadmaster. In addition to the duties established in applicable TOs and other directives, the AG will comply with the procedures and duties in this regulation. The PIC may assign other duties as necessary. The AG will: (T-2)

13.1.1. Conduct aircraft and weapon system pre-flights, plan loads; handle troops and passengers; supervise loading, tiedown, and offloading of ammunition, markers, flares, cargo, baggage, and mission equipment. (T-2)

13.1.2. Perform scanner duties during flight in high threat environments. Identify threats directed toward the aircraft operate defensive equipment and direct evasive maneuvers when required. (T-2)

13.1.3. Possess a thorough knowledge of aircraft and weapon systems and component locations. Inform the crew of malfunctions and systems affected by battle damage. Assisting FE during in-flight emergencies and accomplish recommended corrective actions to isolate malfunctions. (T2)

13.2. Pre-Flight Operations.

13.2.1. Prior to the crew briefing AGs will: (T-2)

13.2.1.1. Acquire ammunition load for the mission to be flown and calculate NEW.

13.2.1.2. Coordinate individual duties to be performed prior to, during and after the mission. On live fire missions AGs should review and assign duties from the amplified prestrike and poststrike checklists and applicable weapons malfunctions contained in TO 1C-130(A)W-1.

13.2.2. 30mm Gun safe and clearing procedures during ground operations. If the 30mm Gun is not safe and clear upon initial inspection, cease any ongoing operations and return the gun to a safe and clear condition. Comply with the following: (T-2)

13.2.2.1. Clear the area of any non-essential personnel.

13.2.2.2. Safe and clear the gun using the following procedures:

13.2.2.2.1. Remove any rounds that have been placed in the feeder by selecting appropriate feed path and backing rounds out using appropriate feed shaft extension and feed shaft stop.

13.2.2.2.2. Replace belt stop pins in both feed chutes if removed.

13.2.2.2.3. If a round is on the rotor assembly or bolt face, remove feed chutes and the gun feeder. Cycle round on the rotor out by operating the worm shaft nut and/or remove round placed on the bolt face. Use caution to ensure the round is not dropped during this process. **WARNING:** Do not cycle rounds through the gun barrel during ground operations unless the aircraft is positioned at an approved parking location (i.e., designated hot gun parking location with gun pointed at a berm).

13.2.2.3. If the serviceability of the round cannot be determined; place the round in ammunition can with foam inside and return the round to weapons/ammunition personnel as soon as practical.

13.3. Ordnance Loading/Downloading.

13.3.1. Ordnance Loading/Downloading. Weapons/Ammunition personnel will normally perform ordnance loading/downloading. When required, qualified AG (or unqualified AG under the supervision of a qualified Instructor AG) are the only crew members qualified to handle munitions. (T-2)

13.3.2. If required, AG will coordinate with munitions personnel for delivery to the aircraft. Only qualified personnel will assist in loading all munitions. Use appropriate checklists in TO 1C-130(A)W-1. (T-2)

13.3.3. Ordnance Loading/Downloading checklist should be utilized when downloading spent casings.

13.3.4. Maintenance operations and ordnance loading/downloading operations should not be performed simultaneously on the aircraft. The PIC is responsible for deciding priority of operations.

13.3.5. The AG will ensure the area is clear of non-essential personnel before starting the ordnance loading/downloading and will continue to monitor the area while ordnance loading/downloading is in progress. Aircrew members not directly involved in the ordnance loading/downloading, aircraft crew chiefs, and quality assurance/safety inspectors may remain with the aircraft on a non-interference basis. (T-2)

13.3.6. A 150 lb fire extinguisher will be positioned near the aircraft for loading/downloading of any ordnance. Aircraft chocks and ground wire will be installed prior to the start of any ordnance loading/downloading operations. (T-2)

13.3.7. At least one AG will remain in the aircraft during ordnance loading/downloading and, if possible, should remain on interphone when engines are running. (T-2)

13.3.8. Ordnance will not be removed from the storage containers until they are in place for loading. 30mm ammunition and CLT will be transported to/from the aircraft in storage containers. (T-2)

13.3.9. For nighttime operations in permissive areas the aircraft interior lights will be on and set to bright white. Cargo loading lights may be turned on and positioned to provide maximum lighting for the up/download operation. Ensure the position of the loading lights will not blind the ammunition trailer driver during approach to the aircraft. (T-2)

13.3.10. The armament placard will be annotated to reflect quantity, type, and location for all internal munitions, or cleared, as applicable. (T-2)

13.3.11. Ensure a FOD check is accomplished under the aircraft and in the loading area when loading or downloading is complete. (T-2)

13.4. Ammunition Handling System (AHS) Loading/Downloading.

13.4.1. AG will inspect 30mm ammunition for serviceability and proper linking during ammunition loading, reject any unusable rounds and return to Weapons/Ammunition

personnel as soon as practical. Ammunition loaded into the AHS by Weapons/Ammunition personnel does not require inspection by the AG, but will be monitored during live fire for signs of un-serviceability and improper linking. (T-2) **CAUTION:** Un-serviceable and improperly linked ammunition may cause 30mm gun malfunctions/jams.

13.4.2. At no time will any object be passed over open 30mm ammunition cans containing live rounds. (T-2)

13.4.3. AGs should not load more than 270 rounds into a single ammunition bin and associated feed chute.

13.4.4. AGs will ensure that there is one empty 30mm ammunition canister with foam inside prior to flight. This ammunition canister will be used to stow any misfired or unserviceable 30mm ammunition. (T-2)

13.4.5. AGs may load rounds into the flexible feed chutes, but rounds will not be loaded into the hard chutes attached to the 30mm gun feeder or the gun until cleared by the PIC to put the gun on-line during the pre-strike checklist or AHS in-flight loading checklist. (T-2) **CAUTION:** When loading the upper feed of the 30mm gun, ensure the leading link of the 30mm ammunition has a properly seated round. If the leading link is empty remove the empty link prior to loading rounds into the feeder. (T-2)

13.4.6. AGs should not normally load dissimilar ammunition into a single ammunition bin.

13.5. In-Flight 30mm Gun Operations.

13.5.1. AGs should make every effort to keep the area inside the dunnage corral around the 30mm gun clear of spent casings, links, and any other obstructions. An excessive amount of spent casings and links may cause a Trainable Gun Mount (TGM) failure.

13.5.2. Additional ammunition stowed on the floor will be secured unless actively re-loading and dunnage bags should be secured, when practical, as they become full. (T-2) **WARNING:** Do not stow full dunnage bags in a manner that they will obstruct the side emergency exit after landing. (T-2)

13.5.3. Ordnance Accountability. After the live fire portion is complete, the AG will ensure all weapons are safe and clear and inspect all ammunition containers and the immediate vicinity of the gun to ensure all rounds are accounted for. (T-2)

13.5.3.1. Annotate in the aircraft forms with an “info note” that lists the number of rounds fired from the 30mm gun’s upper and lower feeds, expended CLT positions, and expended Small Diameter Bomb (SDB) positions. The number of misfired ordnance should also be annotated with an associated location. Return live ordnance and empty casings to munitions personnel as mission requirements dictate. (T-2)

13.5.3.2. Linked 30mm ammunition may be left in AHS provided no rounds extend past the flexible feed chutes into the hard chutes. Place all un-linked 30mm rounds, regardless of serviceability, in an empty ammunition can. If possible, place serviceable and unserviceable rounds in separate ammunition cans. Serviceable rounds may be re-linked and placed in AHS. (T-2)

13.6. Emergency Exits and Safety Aisles. Maintain emergency exits and safety aisles IAW appropriate configuration/mission planning guide. (T-2)

13.7. Cargo Loading/Downloading.

13.7.1. AFSOC AC-130 aircraft do not routinely airlift channel cargo; however, if so tasked, coordinate with the air terminal operations center (ATOC), airlift control element, or air freight/passenger service to obtain the cargo and passenger breakdown and assist in planning of proposed load. Security requirements for ammunition and weapons will be briefed to the AG during the initial load briefing by ATOC personnel. (T-2)

13.7.2. Normally all air freight, fleet service, and servicing personnel are authorized to perform assigned duties in all AFSOC aircraft when escorted by an authorized individual. Air freight personnel are responsible for completion of cargo documentation, palletizing, and movement of cargo to and from the aircraft. They will advise the AG of destination, size, weight, and type of cargo (classified, hazardous, etc.) to permit proper positioning; coordinate traffic activities that may affect loading and offloading; and assign sufficient air freight loading personnel for cargo handling. Air freight personnel are responsible for safe positioning of material handling equipment and cargo to and from aircraft cargo ramp or auxiliary ground loading ramps. Air freight personnel, under the direction of the AG, prepare the aircraft for loading or stowing loading equipment if the aircraft is not to be reloaded, tiedown, and physically offload cargo. If cargo, aircraft equipment, or aircraft structure are damaged during loading or offloading, or if loading personnel are injured, the AG will notify the AC, command post, or terminal operations officer. (T-2)

13.7.3. The AG is responsible for aircraft preflight; load planning; preparation of DD Form 3654, operation of aircraft equipment; supervision and direction of loading, offloading, tiedown, and coordination with loading crew supervisor for checking the cargo against manifests. The AG is responsible for safe movement of cargo into and out of the aircraft. (T-2)

13.7.4. At locations with no air terminal or traffic personnel, the shipper assumes responsibilities in **Paragraph 13.2.1.**

13.7.5. Cargo will be loaded and restrained IAW TO 1C-130A-9, *Cargo Loading Manual*. (T-2)

13.7.6. At stations where aircraft tiedown equipment is exchanged, make every effort to ensure that a one-for-one exchange occurs. If this is not possible, the AG will inform the PIC of lost or missing equipment, make an AFTO Form 781 entry for the discrepancy and annotate missing items on the AFSOC Form 31, *Aircraft -21 Equipment Inventory*. (T-2)

13.8. Passenger Handling.

13.8.1. Most personnel carried aboard AFSOC aircraft are aboard to perform a specific mission. Every effort should be made to advise them of mission progress and deviations. The troop commander should be identified prior to boarding.

13.8.1.1. Determine if the troop commander has any special requirements prior to departure, and advise the PIC of these requirements, if appropriate. (T-2)

13.8.1.2. Determine if specific communications requirements exist and coordinate these requirements with the PIC. (T-2)

13.8.1.3. Ensure that troops do not have access to classified aircraft equipment during the mission unless required and authorized. If troops require access to classified equipment, the requirement should be made known to the PIC prior to the mission. (T-2)

13.8.2. AFSOC aircraft will not normally be tasked to support AMC passenger missions, nor will passengers be manifested or loaded aboard AFSOC aircraft without the prior approval of the aircraft/mission commander. (T-2)

13.8.2.1. Prior to releasing seats, ensure terminal operations passenger handling personnel are aware that passenger comfort latrine facilities are extremely limited, and of the possibility of an in-flight diversion. (T-2)

13.8.2.2. Space-available passengers will not be transported on AC-130 aircraft. (T-2)

13.8.2.3. Ensure all classified equipment is covered prior to passenger boarding and remains covered while they are aboard. The AG is the key figure concerning good passenger relations. Be aware of the doubts and fears which may arise in the minds of passengers and anticipate their questions and actions. (T-2)

13.8.2.4. Passengers may move about the cargo compartment. Good judgment must be exercised on the number of passengers allowed out of their seats at one time. Encourage passengers to keep seat belts fastened when seated. (T-2)

13.8.2.5. Do not allow passengers to lounge on or tamper with equipment, cargo, or baggage. (T-2)

13.8.2.6. The AG will ensure passengers are properly manifested on the DD Form 2131 or suitable substitute. Give one copy of the manifest to the PIC for filing with the flight plan and retain sufficient copies for border clearance. The AG will complete anti-hijacking requirements IAW this instruction. (T-2)

13.9. Border Clearance. Customs, Immigration, and Agriculture require certain forms for border clearance. The AG will ensure that required forms are contained in the aircraft mission kit. Distribute the forms to the crew and ensure their completion prior to landing; deliver them to the proper persons. Also comply with the requirements of this instruction. (T-2)

13.10. Weight and Balance. Accomplish weight and balance for the aircraft IAW TO 1-1B-50, *Weight and Balance*, and this instruction. A basic handbook of weight and balance, TO 1-1B-50, *Weight and Balance Data*, containing current aircraft status, is maintained by the unit possessing the aircraft which provides a supplemental weight and balance handbook for each aircraft. This supplemental handbook is in a wear-resistant binder and may not contain TO 1-1B-50 if a certified copy of Chart C provides the current basic weight, basic moment, and basic index. The binder will include the applicable TO 1C-130(M)W-5, *Basic Weight Checklist and Loading Data*. Also maintain the appropriate Aircraft Configuration / Mission Planning Guide in each binder. (T-2)

13.10.1. Compute weight and balance by using the Chart E mathematical (moments) method. Prepare DD Form 365-4 IAW applicable *Configuration/Mission Planning* Instruction, and applicable TO 1C-130(M)W-5. (T-2)

13.10.2. The weight and balance section of the unit possessing the aircraft is responsible for providing the appropriate agency with information required to keep documents current and accurate. (T-2)

13.11. Pyrotechnics.

13.11.1. This section provides information in preparation for launching pyrotechnics. Reference: TO 11A10-25-7, *Storage and Maintenance Procedures – Pyrotechnic Markers*, and 11A10-26-7, *Storage and Maintenance Procedures – Pyrotechnic Signals*.

13.11.2. Hazards. In general, pyrotechnics contain materials of a hazardous nature. Even though each of the ingredients in a pyrotechnic composition may be relatively stable within itself, it may react with one or more of the other materials to cause deterioration and create an even greater hazard. Pyrotechnics are more dangerous than many other types of ammunition because they are more easily activated. These items should not be handled roughly or exposed to moisture. When subjected to fire, most pyrotechnics burn with intense heat.

13.11.2.1. Toxic Hazards. Many chemicals used in pyrotechnic devices are poisonous if taken internally. This also applies to the residues of burned pyrotechnics. From the inhalation standpoint, the products of pyrotechnic devices and smoke generators present a serious problem. Although most of the smoke and fumes given off by pyrotechnics are considered nontoxic, heavy concentrations in closely confined spaces are dangerous and may be lethal, as they reduce the amount of available oxygen in the air.

13.11.3. Handling. Besides the hazardous basic compositions, pyrotechnics contain sensitive elements such as fuses, friction compositions, and primers. Pyrotechnics should be handled with care and protected against moisture, shock, friction, or heat. Care should be taken to avoid premature ignition or damage that may cause failure when fired. Boxes containing pyrotechnics should not be dropped or thrown. Protective or safety devices should not be removed until just before use. Care should be taken to avoid damage to fiber cases and rip cords located outside the casing of flares. Pyrotechnics should be handled so as to avoid denting or deforming the barrel or case. Do not use pyrotechnics which are dented, deformed, cracked, broken, or have signs of advanced rust, or have shipping covers with an illegible lot number, manufacture date, or other required identifying information. Pyrotechnics will be handled only under the supervision of a competent, qualified person. Most pyrotechnics burn with intense heat; therefore, personnel should be adequately prepared to handle an emergency situation (e.g., heat resistant gloves and broom). (T-2)

13.11.4. Storage. Units which have a requirement for storing pyrotechnics will obtain a license from the host base. (T-2)

13.11.5. Issue Procedures. Pyrotechnics which have been issued for training purposes will be marked in bold capital letters with the word “TRAINING.” These pyrotechnics will always be stored separately from operational stock within storage areas. (T-2)

13.11.6. Safety. All of the pyrotechnics described contain combustible chemicals which, when ignited, generate a flame or smoke (or combination of both) for a broad variety of purposes. These purposes include visual signaling, area or target illumination, and point marking. Most are intended to burn with intense heat.

13.11.6.1. Initiation Mechanism. Pyrotechnic devices normally are equipped with some type of safety pin, lock, or tape designed to prevent accidental activation of the initiation mechanism. Any pyrotechnic that shows sign of damage to safety features is considered unserviceable and must be carefully segregated for prompt disposition by EOD. (T-2)

13.11.6.2. Accidental Initiation. If a pyrotechnic device should be accidentally ignited, in all cases its functioning will result in a fire hazard. The gases generated by this combustion could present a serious toxic hazard. Signaling devices containing propellant charges create an extremely dangerous missile hazard if accidentally ignited.

13.11.6.3. Fighting Pyrotechnic Fires. Pyrotechnic compositions characteristically contain their own oxidants, and therefore do not depend upon atmospheric oxygen for combustion. For this reason, excluding air from a pyrotechnic fire usually is ineffective. Many pyrotechnic mixtures, particularly illuminating flare compositions, burn with intense heat up to 4,500 degrees F. Normally, available extinguishers are of little or no value in fires of this kind, and in addition, may produce toxic or poisonous gases.

13.11.6.4. Safe Altitudes and Distances. Flares not entirely burned out and cooled when they land may ignite combustible material. Safe altitudes and distances depend upon the burning time, rate of descent, and drift of the flare. Such factors will be considered in determining minimum altitudes and distances of release. Signal flares are also a potential fire hazard when the parachute fails to support the signal properly. (T-2)
CAUTION: Flares will not be launched over areas subject to fire except in an extreme emergency. If such an emergency exists, flares should be dropped from sufficient altitude to allow complete burnout before hitting the surface. (T-2)

13.11.6.5. Reporting Instructions. Prepare instructions for mishaps, accidents, and incidents IAW AFI 91-204. Prepare unsatisfactory reports IAW TO 0035D-54, *USAF Material Deficiency Reporting and Investigating System*. (T-2)

13.11.7. AFE Requirements. Personnel launching pyrotechnics through open doors or hatches will wear a restraint harness (secured to the aircraft) or parachute, and nomex gloves will be worn when deploying pyrotechnics. (T-2)

13.11.8. Pyrotechnics Description and Operation:

13.11.8.1. MK-6 MOD 3; Signal, Smoke, and Illumination, Aircraft:

13.11.8.1.1. Description. This signal marker provides long burning (approximately 40 minutes) surface smoke and illumination. This marker was designed for day or night use for all surface reference point marking purposes.

13.11.8.1.2. Operation. Prior to launching the signal marker, remove the adhesive tape covering the pull ring. (T-2) **WARNING:** The smoke signal has a 90 second ignition delay and must be launched immediately after the igniter has been actuated. (T-2) **WARNING:** Packaged signal markers dropped in excess of 10 ft or unpacked signals dropped in excess of 5 ft shall be considered unserviceable. (T-2) **Note:** Do not remove the four square patches of adhesive tape covering the metal caps in the holes from which flame and smoke issue after ignition of the candle. At the time the signal is launched, the pull-type igniter is actuated by hand. (T-2)

13.11.8.2. MK 6 Launch Preparation Procedures. Prepare the signal marker only after the pilot has given clearance. Position two MK 6 markers near the jettison location and pull back the protective tape to expose the pull ring. Leave tape partially attached to marker to allow replacement of the tape if marker is not required. (T-2)

WARNING: Do not prepare more than 2 marks at a time and do not remove more than 4 marks at a time from the storage container in-flight. (T-2) **WARNING:** Jettison MK 6 markers from the aft cargo door and/or ramp or available paratroop door. At no time will any object be jettisoned out of any other location. (T-2)

13.11.8.3. MK-25 MOD 3; Marker, Location Marine:

13.11.8.3.1. Description. This signal marker provides approximately 13-18 minutes of marker illumination. It is used to mark sightings at sea, make sea evaluations, and to simulate targets for the firing of weapons. It may be used to provide smoke on land if a fire hazard does not exist.

13.11.8.3.2. Operation. To activate the marker, the base plate must be rotated from the safe to the armed position to allow the battery cavity ports to be opened. The ports are opened by pressing the two brass colored port plugs into the battery cavity using the thumb and forefinger. A one-pound force is required for plug removal. This device is considered to be a sealed unit until its base plugs (one or both) have been pushed in. Do Not push in the port plugs until immediately prior to jettisoning the mark. If a MK 25 must be retained inside the aircraft and the port plugs have not been pushed in, rotate the base plate to the safe position and return it to its package. The MK 25 will not be retained inside the aircraft after the port plugs have been pushed in. (T-2) **WARNING:** The nose end of this marker must be kept out of line with the body or with other personnel at all times. If marker is initiated, the nose plug is expelled with considerable force creating a missile hazard. (T-2)

13.11.8.3.3. Special Precautions. This marker may be converted for use in fresh water by adding one tablespoon of table salt through the base plugs. Only press in one port plug when adding salt. (T-2) **WARNING:** Personnel launching MK 25 markers with salt added will wear a helmet and adequate eye protection. (T-2) **WARNING:** Converted markers must be used after adding salt. They must not be returned to storage. If not used, they must be jettisoned in-flight, overwater. (T-2) **WARNING:** Be sure salt is not exposed to moisture before and during the conversion process, as moist salt may cause marker to ignite. (T-2) **CAUTION:** Packaged flares dropped in excess of 6 ft or unpacked flares dropped in excess of 3 ft shall be considered unserviceable. (T-2) **Note:** Converted markers will not perform as reliably in fresh water as unconverted markers in sea water.

13.11.8.3.4. MK 25 Launch Preparation Procedures. Position two MK 25 markers near the jettison location. (T-2) **WARNING:** Do not remove more than 4 marks at a time from the storage container. (T-2) **WARNING:** There is no electrical interrupt in the battery of the MK 25. The battery may activate when exposed to salt laden moisture in the least amount (i.e., sweat, moist salt air). Do not push in the port plugs until immediately prior to jettisoning the mark. The MK 25 will not be retained inside the aircraft after rotating the base plate from the SAFE position and pushing the port plugs in. (T-2) **WARNING:** Jettison MK 25 markers only from the following locations: available troop door or aft cargo door and/or ramp. At no time will any object be jettisoned out of any other location. (T-2)

13.11.9. All marks will be launched on command of the pilot using the procedures described in [Chapter 15](#).

Chapter 14

DIRECT SUPPORT OPERATOR/TACTICAL SYSTEMS OPERATOR PROCEDURES

14.1. General. This volume establishes procedures for AFSOC Direct Support Operators (DSO) and Tactical Systems Operators (TSO) for employment on AC-130W aircraft. In addition to the duties listed in applicable technical orders, directives, and this instruction, the PIC may assign other duties as necessary. The DSO/TSO is primarily responsible for providing inputs to enhance aircrew SA. For the purpose of this chapter the DSO and TSO will be referred to as “operator.” The mission requirements will determine whether a DSO and/or a TSO will be employed.

14.2. Mission Planning Factors.

14.2.1. Mission Planning. Detailed information on mission planning can be found in AFTTP 31.General Planning(S), *General Planning and Employment Considerations*, AFTTP 31.Threat Guide(S), *Threat Reference Guide and Considerations*, AFTTP 31.AC130W(S) (or equivalent), *Combat Aircraft Fundamentals*, and AFTTP 33.AC130W(U) (or equivalent), *Combat Aircraft Fundamentals*.

14.2.2. The operator, after coordinating with the supporting analyst and other appropriate agencies, will conduct mission planning with the aircrew of all combat mission scenarios. The operator will brief expected scenario inputs based on the analytical data, as required. (T-2)

14.2.3. The operator is responsible for coordinating with all appropriate agencies to obtain all required or anticipated mission planning, professional, and mission equipment for the duration of the flight/deployment. The operator will ensure all equipment is inventoried and inspected prior to flight/deployment. (T-2)

14.3. Preflight/In-flight Responsibilities. The operator will: (T-2)

14.3.1. Brief the crew on the mission equipment configuration and anticipated inputs.

14.3.2. Ensure the crew is aware of mission capabilities and limitations, as well as operational security considerations.

14.3.3. Monitor SA information and relay pertinent information to the crew.

14.3.4. Advise the crew of any change in the status of mission equipment.

14.3.5. The operator is responsible for knowing approximate aircraft location, altitude, and intentions at all times.

14.4. Communications Procedures. When missions require the operator to communicate, they will obtain proper frequencies, time hack, schedules, and call signs prior to flight. Depending on the nature of the mission and the communications, the operator will keep the crew updated on any pertinent information and will coordinate with the PIC for authorization to transmit. On AC130W aircraft, the operator will coordinate with the crew during mission planning regarding interphone connectivity. (T-2)

14.5. Post Mission. In addition to appropriate debriefs, the operator will also ensure: (T-2)

14.5.1. Equipment write-ups are passed on to maintenance.

14.5.2. Post mission Technical Summary inputs are provided to the supporting analyst.

14.5.3. Provide information to their units summarizing mission events, as required.

14.6. Augmentation. Some contingency operations may require operators from other units, or in some cases, non-aircrew personnel to provide cryptologic support. In these cases, a mission-ready instructor-qualified operator will fly as primary operator, and be responsible for operator inputs. (T-2)

Chapter 15

AC-130W EMPLOYMENT

15.1. General. This chapter describes the specific equipment requirements, training restrictions, and regulatory guidance for AC-130W employment. This chapter is not a stand-alone reference and should be used in conjunction with the rest of this instruction, the AFTTP series, and other directives. All crew members must actively participate in keeping tactics and publications up to date. Submit proposed publications and tactics changes to HQ AFSOC/A3V IAW this instruction. (T-2)

15.1.1. Employment Decisions. The PIC is the decision authority on tactics and employment. They are responsible for risk assessment and mission execution. Select weapons and munitions prior to flight whenever possible. This is not intended to limit flexibility, but to reduce task loading in the employment area. (T-2)

15.1.2. Publications. Joint terminology will be used for mission planning and execution. Crew members will have a working knowledge of the information contained in the following publications: JP 303, *Joint Interdiction*; JP 309.1, *Joint Laser Designation Procedures* (JLaser); JP 309.3, *Joint Tactics, Techniques, and Procedures for Close Air Support* (CAS). Crew members will also maintain a working knowledge of AFTTP(I) 32.6, *Multi-Service Tactics, Techniques, And Procedures For The Joint Application Of Firepower* (JFIRE). (T-2)

15.2. Minimum Operating Equipment. Refer to **Table 15.1**, Tactical Operations, for minimum tactical equipment requirements. Aircrew experience level and mission scenario may dictate greater equipment requirements than those listed. (T-2)

Table 15.1. Tactical Operations (T-2).

Event	Radar	Navigation Solution	Rad Alt		Sensor	
			Pilots	NAV	M1	M2
VMC SCA ¹		I-INS	X	X		
IMC SCA ¹	X	I-INS or GPS	X	X		
NVG Landing ²		I-INS or GPS	X	X		
NVG Landing- Blacked Out RWY ²		I-INS or GPS	X	X	X ³	X ³

Notes:

1. The NAV's IDCU must be operational.
2. During local VFR pattern training only the pilots' radar altimeters are required.
3. If both sensors are inoperative, must have SCNS G-I sub-mode.

15.2.1. Degraded Systems Training (DST). DST is used to prepare crews to accomplish the mission simulating certain pieces of equipment inoperative or intentionally turned off for emission control.

15.2.1.1. The equipment simulated as inoperative, aircrew coordination, crew duties, and disorientation/emergency procedures will be briefed prior to flight. (T-2)

15.2.1.2. For terminal area operations in mountainous terrain weather must be VMC and the pilot and NAV radar altimeters must be operational and on. (T-2)

15.2.1.3. During SCNS degraded operations the radar must remain operational and on. (T-2)

15.2.1.4. An instructor must be in either a pilot or NAV/Combat Systems Operator (CSO) position. (T-2)

15.2.1.5. The SCNS INS or GPS must be operational and on during DST. Integrated Digital Control Units (IDCU) and flight director mode switches can be positioned to simulate the INS and/or GPS inoperative. (T-2)

15.2.1.6. DST Procedures.

15.2.1.6.1. Radar denied operations. The radar will be placed in the standby position to simulate an inoperative/unavailable radar. Having the radar in standby will allow a quick return to normal procedures during limited visibility or in emergency situations (inadvertent weather penetration, emergency climb, etc.). When operating at low altitude, do not place the radar in standby if cloud cover degrades effective illumination. (T-2)

15.2.1.6.2. SCNS degraded operations. Simulated SCNS degradation may be accomplished during any phase of flight regardless of the illumination. The flight director mode switches can be positioned to simulate the INS and/or GPS inoperative or the NAV may select a degraded SCNS sub-mode via the IDCU. Additionally, any crew position IDCU may be dimmed. The crew's primary navigational references become the CP/NAV charts while utilizing Brimstone and PFPS moving map to enhance SA. (T-2)

15.2.1.6.3. C-MIGITS failure. Simulate C-MIGITS failure by turning it off. VMC required. (T-2)

15.3. En Route Operations.

15.3.1. Altimeter Updates. The NAV should perform an altimeter update within 20 nm of airfields and prior to glide slope intercept for SCAs. Update locations will be briefed prior to flight as required and verbalized in-flight when conducted. (T-2)

15.3.2. Radar Altimeter. During en route/CAS operations, radar altimeters will be set per crew discretion but should not be lower than 3,000 ft. (T-2)

15.3.3. GCAS. Normal mode (audio and visual on) will be used during en route/CAS operations. (T-2)

15.3.4. ETCAS. Use the Above, Below, and Normal settings as appropriate for the phase of flight and mission. The Below setting should be used for tactical descents. (T-2)

15.4. RESERVED FOR FUTURE USE.

15.5. Munitions. Information on specific munitions and targets is contained in AFTTP 33.AC130W (or equivalent).

15.5.1. Misfired Round Procedures.

15.5.1.1. 30mm misfired round procedures. Use this procedure anytime a 30mm round is misfired. Immediately place misfired 30mm rounds in an empty ammunition storage container with foam inside and secure with lid. (T-2) **Note:** Misfired rounds may be cycled through the gun and ejected into the dunnage corral. AG should monitor the dunnage corral for misfired rounds when practical.

15.5.2. Hot Gun/Jammed Gun Procedures. These procedures will be used any time a gun contains a round that cannot be removed in-flight. (T-2)

15.5.2.1. If possible, remain overhead the live fire range with the gun pointed in a safe direction until the gun has cooled to ambient temperature, then follow Jammed Gun procedures.

15.5.2.2. Hot Gun Procedures. If, in the opinion of the AG, any probability for an inadvertent firing exists and the gun cannot be mechanically and electrically safed, the live fire will be terminated and the following procedures will be used: (T-2)

15.5.2.2.1. Notify appropriate controlling agencies of the hot gun condition and declare an emergency. (T-2)

15.5.2.2.2. Return to recovery airfield using approved hot gun routes and avoid bringing the guns to bear on any populated areas. (T-2)

15.5.2.2.2.1. If no hot gun recovery procedures are in place for nonlocal ranges, crews and/or off-station planners will coordinate with appropriate agencies (range control, recovery/divert airfields, airspace control, EOD, and airfield fire department) for hot gun recovery prior to departing for any off-station ordnance delivery missions. Crews/planners will plan to use hot gun recovery routes that keep guns pointed away from populated areas to the maximum extent possible. Park IAW airfield's designated hot gun/hot cargo areas. In the local area, follow the below procedures. (T-2)

15.5.2.2.3. Hot Gun parking will be IAW recovery airfield restrictions. Aircrew withdrawal distance is 400 ft. (T-2)

15.5.2.3. Jammed Gun Procedures. If the AG determines that there is no probability of an inadvertent firing, the following procedures will be used: (T-2)

15.5.2.3.1. The PIC may elect to continue the live fire. Dry fires and aerial refueling are not authorized. (T-2) **Exception:** Off station aircraft may conduct aerial refueling if mission requirements dictate.

15.5.2.3.2. The aircrew may execute a normal recovery to a full stop at recovery airfield. Multiple approaches/pilot pro are not authorized until the malfunction has been cleared. (T-2)

15.5.2.3.3. Off-station/out and back aircraft are authorized to return to the recovery airfield at the completion of their live fire mission. Do not depart an airfield without the approval of the squadron commander or operations officer. (T-2)

15.5.3. Parking with Munitions. If required to park with munitions on board, comply with distances in **Table 15.2**. These separation distances are the minimum required between explosives loaded aircraft and any inhabited building, civilian aircraft or civilian/joint use runway. All explosives loaded aircraft should be parked in an approved, properly sited aircraft parking location (i.e., hot cargo) if available. (T-2)

Table 15.2. Parking Restrictions with Munitions On-board (T-2).

MUNITION TYPE	CLASS	SEPARATION DISTANCE
AGM-176, AGM-114 and/or 105mm HE (with or without other munitions)	1.1	1,250 ft
GBU-39 (with or without 30mm)	1.2.3	500 ft
30mm only	1.2.2	140 ft
M206/M211 Flares	1.3	75 ft (wingtip clearance)

15.5.4. Emergency Procedures with Ammunition. Fire: (T-2)

15.5.4.1. Notify PIC/Crew.

15.5.4.2. Notify fire department.

15.5.4.3. Fight fire and remove munitions, if possible. Note time fire envelops munitions.

15.5.4.4. All non-essential personnel will withdraw to 2,500 ft. Crew members fighting the fire will withdraw to 2,500 ft when fire envelops munitions, or after arrival of firefighters, whichever occurs first. If the NEW exceeds 500 lbs and any Class 1.1 munitions are on board, non-essential personnel must withdraw to 4,000 ft.

15.5.4.5. For fire with only division 1.3 munitions (markers, flares, and 105mm clearing rounds) on board, non-essential personnel must withdraw to 600 ft. **Note:** Withdraw distance requirements are contained in AFMAN 91-201, *Explosive Safety Standards*.

15.6. Marker Flare Launching Procedures. All marks will be launched on command of the P/CP. (T-2)

15.6.1. Use the following procedures to launch any marker flares or illuminated targets: (T-2)

15.6.1.1. "AG, P/CP standby to launch marks."

15.6.1.2. "In-progress AG" – Ensure jettison location/paratroop door is open and mark is prepared according to appropriate launch preparation procedures. Rotate base plate to ARMED at this time.

15.6.1.3. "AG standing by to launch marks" – Reply when ready to jettison mark.

15.6.1.4. “AG, P/CP launch marks, now” – For MK 25, push in port plugs and jettison mark. For MK 6, pull igniter plug and jettison mark. **Note:** P/CP allow approximately 10 seconds for the AG to arm each MK 25.

15.6.1.5. “Mark(s) away” - Mark(s) jettisoned. **Note:** MK 25 flares burn for approximately 13 minutes, if more flares are needed the CP and AG should pre-coordinate for further launches.

15.7. Crew Duties. General crew member responsibilities during CAS: (T-2)

15.7.1. The PIC is primary on flying the aircraft and is the final authority on weapons/fusing selection and weapons release parameters.

15.7.2. The CP is primary for SCNS operation and ATC, C2, and air stack communications.

15.7.3. While stationed on the Mission Operator Pallet (MOP), the NAV is primary for M1 sensor operations, battlefield SA and friendly position SA.

15.7.4. The CSO, as the MOP Lead, is primary for M2 sensor operations, ground party communications, weaponeering, targeting, fire control systems, battlefield SA and friendly position SA.

15.7.5. Once the NAV transitions to the MOP, the FE assumes control of all flight deck NAV panel equipment and is primary for monitoring defensive systems.

15.7.6. The AGs are primary for scanner duties and weapon systems monitoring and operation, to include movement of CLT between the storage rack and the cargo door.

15.8. Pre-Strike Coordination.

15.8.1. Order of Battle (OB) Analysis. The CSO and NAV will coordinate with intelligence personnel to obtain a current and complete OB for the area of operations. Based on analysis of the OB, the CSO and NAV will ensure the planned route of flight minimizes aircraft exposure to the threat and the probability of detection. (T-2)

15.8.2. Chart Preparation. Use 1:50,000 Topographical Line Maps (TLM) for all CAS objective areas when available; however, charts smaller than 1:250,000 should not be used. Grid lines must be clearly displayed for accurate point annotation. A 10 nm minimum safe altitude (MSA) will be computed for every assigned objective area. (T-2)

15.8.3. During CAS, the NAV repositions to the cargo compartment to perform primary crew duties on the MOP.

15.8.3.1. Prior to the repositioning to the MOP the NAV will give a navigation hand-off briefing to the CP and FE. The briefing will cover: radar set up, SCNS settings, BULLSEYE, steering, defensive system settings, MEA, MSA, and general situation (to include distances to SUA/Airspace Control Measures (ACM)). (T-2)

15.8.4. Navigation. Once the NAV has transitioned to the MOP, the pilots are responsible for en route and tactical navigation. SCNS will be primary for en route navigation. Tactical navigation may be performed via Brimstone or SCNS. (T-2)

15.8.4.1. Brimstone will normally be the primary means of navigation within the tactical environment. The CSO will ensure the Brimstone airspace overlays are loaded onto the work stations. Workload permitting, the CP/FE should enter relevant tactical navigation

points into SCNS throughout the mission. In the event of Brimstone degradation, the CP or FE will input tactical navigation points into SCNS. (T-2)

15.8.5. Laser usage. The AC-130W has capabilities for laser designation, range finding, and illuminating. All air-to-surface laser operations on-range will be IAW AFI 13-212, *Range Planning and Operations*, this instruction, and local range procedures. Off-range laser emissions are authorized IAW AFI 11-214 *Air Operations Rules and Procedures*. The following paragraphs contain information discussing operation of the airborne Switchable Wavelength Laser Subsystem (SWLS) and Laser Illuminator (LI) systems. **Note:** Aircrews will use J-Laser terminology when talking with air and ground forces. (T-2)

15.8.5.1. SWLS. The 1.06 micron SWLS (designator) will only be fired in combat or on laser approved ranges. If ground parties are present they will be advised prior to lasing. At no time will the 1.06 micron SWLS be used during dry fires outside of laser approved ranges. The 1.57 micron SWLS (range finder) may be used to simulate the 1.06 micron SWLS in dry fire areas while complying with the 80m minimum slant range, IAW AFI 11-214. Due to the requirement for an elevation update to the fire control system, the NAV/CSO may have to frequently fire the 1.57 micron SWLS throughout the course of the mission. The AC will advise the NAV/CSO if it is unsafe to fire the 1.57 micron SWLS. (T-2) **WARNING:** The NAV/CSO will notify the crew prior to firing the 1.06 micron SWLS laser. On training missions they will only be fired on laser-approved live-fire ranges. If ground parties are present they will be advised prior to lasing. (T-2) **WARNING:** Crew members will not use binoculars during any lasing operations when weather is in close proximity to the aircraft or when firing a non-eye-safe laser. (T-2)

15.8.5.1.1. When cleared by the PIC, the NAV/CSO will state "LASER COMING ON" prior to firing the 1.06 micron SWLS. The crew will avoid looking out of the aircraft. Upon completion of firing the designator, the NAV/CSO will state "LASER OFF" to notify the crew that the laser designator is off. (T-2)

15.8.5.2. Laser Illuminator (LI). The LI is authorized for use in live and dry fire areas while complying with the 732m minimum slant range, IAW AFI 11-214.

15.8.5.2.1. When cleared by the PIC, the NAV/CSO firing the LI will state "SPARKLE ON" prior to firing the LI. To notify the crew that the LI is OFF, the NAV/CSO will state "SPARKLE OFF." (T-2)

15.9. Air-to-Surface and Air-to-Air Training.

15.9.1. AFI 13-212 is the parent instruction for all AF ranges. Wings/Groups will publish range procedures for frequently used weapons ranges IAW AFI 13212, Vol 1 and **Chapter 10** to this instruction. (T-2)

15.9.1.1. If not using an AF range aircrews will use the component/Host Nation range procedures. (T-2)

15.9.2. Aircraft bank will be limited to 60° and pitch is limited to +/- 15°. (T-2)

15.9.3. AFI 11-214 describes minimum weather requirements for training.

15.9.3.1. Air-to-surface minimum weather will be sufficient to allow the crew to visually observe the round to impact. (T-2)

15.9.4. VMC Range Clearing.

15.9.4.1. Visually clear the target area and weapon safety footprint areas on AF Class B and Class C ranges before live firing. (T-2)

15.9.4.2. Visually clear the target area and weapon safety footprint areas at non-AF ranges. (T2)

15.9.4.3. The crew will contact the range controller to determine the ground parties' status and contact ground parties, as required, as a prerequisite to the CSO calling the range clear for live-fire operations. The CSO will coordinate with the NAV to ensure range clearance and state, "Pilot, CSO is satisfied the range is clear" when complete. (T-2)

15.9.4.4. Range Clearance. The PIC or CP will call the range controller providing firing clearance and advise them of "going hot." The PIC will ensure all range restrictions have been met, proper clearance is attained and the range is clear prior to authorizing the AG to put the gun on line and use of the laser designator. (T-2)

15.9.4.5. Modify these procedures as necessary in order to comply with different ordnance delivery regulations/procedures at off-station locations. (T-2)

15.10. Dry-Fire Operations.

15.10.1. On sorties accomplishing both live and dry fire objectives, the PIC will notify the crew whether to accomplish live or dry fire actions during the target briefing of the Pre-Strike checklist. (T-2)

15.10.2. AGs will not forward rounds into the 30mm gun during dry fire operations. During all dry fire operations, all calls to bring the gun online will be prefaced with "simulated." (T-2)

15.11. Live-Fire Operations. WARNING: Any crew member detecting an unsafe condition during live fire will call "CEASE FIRE." Firing will not resume until the unsafe condition is corrected. (T-2)

15.11.1. Maintain a minimum of 1,000 ft altitude separation from the highest known trajectory during combined live-fire operations with ground artillery, mortar, or helicopter fire. (T-2)

15.11.2. Danger Close. JP 3-09.3, *Close Air Support (CAS)*, defines danger close as the 0.1% probability of incapacitation (PI) based on Joint Munitions Effectiveness Manual (JMEM) data. AC-130W danger close distances are listed in AFTTP(I) 3-2.6, *JFIRE*. For targets inside the 0.1% PI, the ground commander or authorized controller (fire support officer, team leader, etc.), must accept responsibility for risk to friendly forces IAW JP 3-09.3 by passing his initials or stating, "CLEAR DANGER CLOSE." If the mission is preplanned, the ground commander or designated representative should pre-brief acceptable minimum engagement distances.

15.11.3. Peacetime Restrictions. The following restrictions apply to all peacetime live-fire training missions. These restrictions do not apply anytime the Ground Forces Commander (GFC) requests fire support under CJCSI 3121.10, *Standing Rules of Engagement for US Forces*.

15.11.3.1. A tweak will be completed prior to live fire training with ground personnel. (T-2)

15.11.3.1.1. Crews will select a tweak target a minimum of 750 meters away from all ground parties to compensate for untweaked system accuracy and fragmentation effects. Once the tweak is complete and the fire control system has been verified accurate (impacts are within five mils of aim point), crews will fire no closer to ground parties than 500 meters with 30mm. (T-2) **WARNING:** During peacetime, never point a trainable gun at a friendly position or slew the sensor while the gun is trainable. Failure to heed this warning could cause injury or death to friendly forces if inadvertent gun firing should occur. (T-2) **WARNING:** Use of “Live” function while not actively tracking a target may result in inadvertent targeting of friendly forces. (T-2) **WARNING:** The NAV/CSO will not engage Automatic Video Tracking (AVT) while firing any weapon. (T-2)

15.11.3.1.2. If there has been a gun alignment, gun replacement, or M2 removal/replacement then increase distance from tweak target as much as possible during initial tweak while maintaining required range buffer. The initial tweak should be performed no higher than 6,000 ft AGL. (T-2)

15.11.3.2. Ground Parties. The CSO/NAV will notify the ground party prior to use of the 1.06 micron SWLS, prior to going hot, when tweak is complete, and when ready for calls for fire (if such training is desired). “Comm out” calls for fire may be performed, but will be requested and briefed by the ground party prior to commencing and will be done at the discretion of the aircrew. (T-2)

15.11.3.3. Unplanned Ground Parties. Face-to-face briefings are not required when performing live fire training with qualified ground parties on local ranges. If no face-to-face briefing is accomplished, the ground party will brief the crew on the primary radio frequency the following information prior to commencing live fire training operations: Unit (if not already known), call sign(s), primary controller (if applicable), radio frequencies, ground party location, number of personnel, number of vehicles, types of marking devices, comm out procedures, ground party procedures for hot gun, verify that the range has been cleared, number and type of calls for fire or other training (if applicable). The NAV/CSO will read back all information. (T-2)

15.12. Precision Guided Munitions (PGM) Employment.

15.12.1. PGM engagements are normally initiated by mission tasking, 5-line, or 9-line, depending on situation, munitions type, targeting method (coordinates vs laser guidance) and current TTPs. All available crew members should record engagement information as it is received.

15.12.2. Both the NAV and CSO will confirm the target. (T-2) **Exception:** During multi-weapon engagements, the PM and FE will assist the NAV/CSO in maintaining PID when only one of them is able to confirm the target. (T-2)

15.12.3. Any crew member recognizing an incorrect confirmation (friendly or target) or incorrect bearing/range will immediately advise the crew. (T-2)

15.12.4. The NAV/CSO conducting the PGM employment will conduct a weapons brief. (T-2)

15.12.5. Unless otherwise coordinated, the initiation of the NAV/CSO weapons brief clears the pilots to maneuver the aircraft for weapon(s) employment.

15.12.6. All switches will be returned to their pre-launch condition after weapons impact. (T-2) **Exception:** The PIC's Master Arm switch may remain on.

15.13. 30mm Employment.

15.13.1. Restrictions. Weather must be sufficient for the CSO to observe round impact. (T-2)

15.13.2. A 30mm engagement will normally be initiated by 5-line. All available crew members should record the information as it is received.

15.13.3. Both the NAV and CSO will confirm the target. (T-2) **Exception:** During multi-weapon engagements. The PM and FE will assist the NAV/CSO in maintaining PID to the max extent possible. (T-2)

15.13.3.1. Any crew member recognizing an incorrect confirmation (friendly or target) or incorrect bearing/range will immediately advise the crew. (T-2)

15.13.4. The CSO will conduct the weapons brief for 30mm employments. (T-2) **WARNING:** During live fire procedures, the CSO will not depress the Gun Fire button unless tracking the target and attempting to fire the weapon. (T-2)

15.14. RESERVED FOR FUTURE USE.

15.15. Multiple Weapon Engagements.

15.15.1. Multiple weapon engagements are normally initiated by 5-line or 9-line, depending on munitions types, targeting method(s) (coordinates vs laser guidance) and current TTP. All available crew members should record engagement information as it is received.

15.15.2. The NAV and CSO will confirm their respective targets. The PM and FE will assist the NAV/CSO in maintaining PID to the max extent possible. (T-2)

15.15.3. The CSO will conduct the weapons brief for Multiple Weapon engagements. (T-2)

15.16. Delaying Weapon Release.

15.16.1. Any crew member that observes a condition that may jeopardize a successful safety when utilizing any weapon will call "CEASE FIRE" over the primary NET. Upon hearing this call: the CSO selects Inhibit for the 30mm and the PIC turns PGM and Trainable Gun Mount (TGM) Consent Switches Off. After resolving the issues that led to a "CEASE FIRE" call, the crew will re-accomplish the weapons brief prior to continuing engagements. (T-2)

15.16.2. If a crew member observes a situation requiring a pause in 30mm engagement, they will call "CHECK FIRE" over the primary interphone NET. Upon hearing this call: the CSO selects Inhibit for the 30mm. The pilot will normally turn Gun consent off after the CSO has selected inhibit. (T-2)

15.17. PostStrike Coordination.

15.17.1. Run the POSTSTRIKE checklist upon completion of strike operations or when transitioning between dry fire and live fire operations. (T-2)

15.17.2. The CP and FE will brief the following once the NAV is on the flight deck: radar set up, SCNS settings, BULLSEYE, steering, defensive system settings, MEA, MSA, and general situation (to include distances to restricted operating zones (ROZs) or other SUA), departure plan, aircraft configuration, SCNS setup (control points, reference points, waypoints, and BULLSEYEs) radar, and defensive systems. (T-2)

15.18. Defensive Tactics.

15.18.1. Specific defensive procedures are contained in AFTTP 3-1.AC-130W (or equivalent).

15.18.2. Practice Defensive Maneuvers. All crew members will be advised of the time period when they may expect threat maneuvers. This simulated threat time will provide maximum safety to prevent personnel injury during the rapid changes of aircraft position. Crew members should be prepared for abrupt maneuvers during any phase of flight and should remain strapped in whenever flight duties do not require them to move about the aircraft. During training, defensive maneuvers should not feature sustained zero G profiles. (T-2)

15.19. Collateral Missions.

15.19.1. Strike Coordination and Reconnaissance. Refer to AFTTP 3-1 Volume 1, *General Planning Considerations*, and AFTTP 3-1.AC-130, *Tactical Employment, AC-130*. When working with ground parties, gunship crews will not give weapons release authority unless authority is delegated to the gunship. (T-2)

15.19.2. Combat Search and Rescue (CSAR). The AC-130W should act as On-Scene Commander (OSC) until relieved.

15.20. Self-Contained Approach (SCA). SCA procedures are used to place the aircraft on final approach, properly configured, in a position to identify the landing area and complete a landing. SCA procedures may be used for approaches to conventional airfields. Comply with local ATC restrictions and host nation agreements, as appropriate. (T-2)

15.20.1. Weather minimums. All SCAs must be conducted in VMC unless HQ AFSOC/A3 approves IMC operations. If approved, IMC SCA minimums will be no lower than 300 ft and 1 sm. (T-2)

15.20.2. SCAs are flown to a Minimum Descent Altitude (MDA) and Missed Approach Point (MAP).

15.20.2.1. MDA. To compute MDA for VMC or approved IMC operations, add 300 ft to the Touchdown Zone Elevation (TDZE). (T-2)

15.20.2.2. MAP. The MAP is 1 nm distance to go (DTG) on SCNS. (T-2)

15.20.3. Glide Slope. SCAs will normally be planned for a 3-degree glide slope but may be tailored as required for tactical consideration. Plan to intercept a 3-degree glide slope no later than one mile from touchdown unless terrain or obstructions dictate otherwise. (T-2)

15.20.4. SCA Procedures.

15.20.4.1. DESCENT Checklist. The PF the SCA and NAV will brief the SCA. (T-2)

15.20.4.1.1. The PM will check the runway data in SCNS using approved sources (the SCA plate, Form 70, *Pilot's Flight Plan and Flight Log*, or FLIP approach plate). (T-2)

15.20.4.1.2. The NAV will give course corrections to intercept the final approach course prior to or at the IP. (T-2)

15.20.4.2. BEFORE LANDING Checklist. The PF will initiate the BEFORE LANDING checklist as required to ensure the aircraft is configured and the checklist is complete prior to glide slope intercept. (T-2)

15.20.4.2.1. The PM and NAV will set their radar altimeters to the MDA (normally 300 ft). The PF may set their radar altimeter as required to provide the most SA for accomplishing the landing (100 ft, 10 ft, etc.). (T-2)

15.20.4.2.2. The PM will make mandatory calls IAW [Table 5.4](#) of this guidance. (T-2)

15.20.4.3. Glide Slope Intercept. The BEFORE LANDING checklist should be completed prior to glide slope intercept.

15.20.4.3.1. Approaching glide slope intercept, the NAV will confirm the accuracy of the barometric altimeter setting by comparing actual AGL and MSL altitudes with those depicted on the SCA template. (T-2) **WARNING:** The NAV will verify that the actual aircraft position is inside the planned SCA obstacle template prior to initiating descent. (T-2)

15.20.4.3.2. At the prescribed descent point, the NAV will state "Begin Descent," and state initial descent rate. The NAV will provide course and altitude corrections as appropriate (approximately every 1 nm). (T-2)

15.20.4.3.3. The PM will back up the PF on the SCNS/instrument displays. (T-2) **Note:** The NAV and at least one pilot will monitor the SCNS Airborne Radar Approach (ARA) page for glide slope cross-check. (T-2)

15.20.4.4. Landing.

15.20.4.4.1. The FE will visually scan the runway and verbalize any conditions preventing a safe landing. (T-2)

15.20.4.4.2. The CSO will use a sensor to aid in visual acquisition of the runway and verbalize any conditions preventing a safe landing. (T-2)

15.20.4.4.3. Do not descend below 300 ft until the runway environment is visually identified and confirmed by both pilots. (T-2) **CAUTION:** The M2 sensor will be stowed prior to touchdown. Both sensors will remain powered on for landing. (T-2)

15.20.4.5. Go Around Procedures. Do not descend below the MDA until the runway is in sight. A go-around is required when the runway is not in sight at the MAP or a safe landing cannot be made. (T-2)

15.20.4.5.1. The PM will advise the PF upon arrival at the MAP and the NAV will state the initial MSL altitude and heading required. (T-2) **CAUTION:** Pilots are more susceptible to spatial disorientation during NVG go-arounds and departures.

15.21. Loss of NVG Procedures:

15.21.1. Airborne. If the P or CP loses use of their NVGs inside of 1 nm, perform a go-around. (T-2)

15.21.1.1. If the FE loses use of NVGs, land at the discretion of the PIC. Use other crew members and all available sensors as necessary to clear for hazards and confirm the landing zone. (T-2)

15.21.1.2. After takeoff, continue the climb out and follow the appropriate procedures for loss of NVG. (T-2)

15.21.2. On the Ground. The PF will determine whether to continue the takeoff roll as applicable. The FE should be prepared to turn on overt lighting at the direction of the PIC in case of NVG failure during takeoff or landing roll. (T-2)

15.21.3. The PM must be ready to immediately take control of the aircraft if the PF experiences spatial disorientation or an NVG malfunction. When necessary, take the appropriate action required regardless of qualification. Situation permitting, start a climb to at least MSA until the pilot experiencing the problem is ready to assume PF or PM duties. (T-2)

15.22. Tactical Recoveries. Options are to enter the traffic pattern via an initial, downwind, base, straight-in, or perpendicular to the runway. During hostile activity, the pilot can control several factors that may reduce the time in a threat envelope. These are altitude, arrival and departure flight path, proximity to the airfield, and proximity to known threats. The approach must be unpredictable. Comprehensive mission planning and knowledge of the threat location, density, and capability will dictate the specific tactics to be employed. The recommendations below are some examples; however, ingenuity is the key in determining what type of approach to fly. **WARNING:** Aircrew will conduct a thorough pre-brief of terrain and obstacles in any area where low altitude operations are performed. (T-2)

15.22.1. Overhead. Establish initial on the runway extended centerline and fly the entry at 1,500 ft above field elevation, pattern altitude, or as cleared by tower and, normally, at 200 KIAS. (T-2)

15.22.1.1. Break as the tactical situation permits. Perform a 45° bank turn and retard the throttles to flight idle. Make a level turn to the downwind leg with power reapplied as necessary to maintain 150 KIAS. Delay configuration until established on downwind. And complete the before landing checklist. (T-2)

15.22.1.2. Final. Roll out on final at no less than 300 ft and ¼ nm from the end of the runway. Airspeed during the turn to final will be 140 KIAS, or approach speed, whichever is higher. Slow to final approach speed when established on final. (T-2)

15.22.2. Downwind. Enter a downwind leg for the active runway, normally maintaining 200 KIAS and 1,000 ft above field elevation or traffic pattern altitude, whichever is higher. Position the downwind to allow for a continuous turn to final. (T-2)

15.22.2.1. Break. Break approximately $\frac{1}{2}$ nm past the end of the runway with a 45° angle of bank and retard power to flight idle. Complete the BEFORE LANDING checklist as airspeed permits. (T-2)

15.22.2.2. Final. Make a level turn until reaching 150 KIAS or approach speed, whichever is higher, and then descend at this airspeed while completing the turn. Roll out on final at no less than 300 ft and $\frac{1}{4}$ nm from the runway. Make sure to correct for winds on the approach to prevent over/undershooting. (T-2)

15.22.3. Random steep approach. This maneuver is based on a modified 360 degree overhead approach to a normal landing. Conditions may require that the example random steep approach described below be modified to satisfy local conditions ([Figure 15.1](#)).

15.22.3.1. Establish initial at approximately 4,500 ft AGL and accomplish the before landing checklist. (T-2)

15.22.3.2. When approximately one-third of the distance down the runway, extend 100 percent flaps and commence descent while beginning a 360 degree turn to final. (T-2)

15.22.3.3. Maintain 140 KIAS or approach speed, whichever is higher, until wings level on final. Plan the approach to remain within two miles of the airfield and to enter no less than a $\frac{1}{4}$ mile and not more than a one mile final. The maneuver can be modified to enter on other than an initial; i.e., 270° or 90° overhead. In these cases change the initial altitude according to the pilot's judgment. (T-2)

15.22.4. Random shallow approach. These maneuvers are based on approaching the airfield from various directions at low en route altitude (e.g. 500 ft AGL) and en route airspeed with the descent/before landing checklist accomplished. The random shallow straight-in and random shallow abeam are two examples of random shallow approaches ([Figure 15.2](#) and [Figure 15.3](#)). **WARNING:** Aircrew will conduct a thorough route study and pre-brief of terrain and obstacles in any area where low altitude operations are performed. (T-2)

15.22.4.1. Begin a level slowdown maneuvering to approach speed at a predetermined point. While remaining at low altitude, maneuver the aircraft to enter a point on final no less than $\frac{1}{4}$ nm from the runway, accomplish the before landing checklist, and complete the landing IAW the flight manual. (T-2)

15.22.4.2. The pilot may elect to make a climbing slowdown to normal traffic pattern altitude. Maneuver the aircraft to enter no less than a $\frac{1}{4}$ nm final, accomplish the before landing checklist, and complete the landing IAW the flight manual. (T-2)

Figure 15.1. Random Steep Approach.

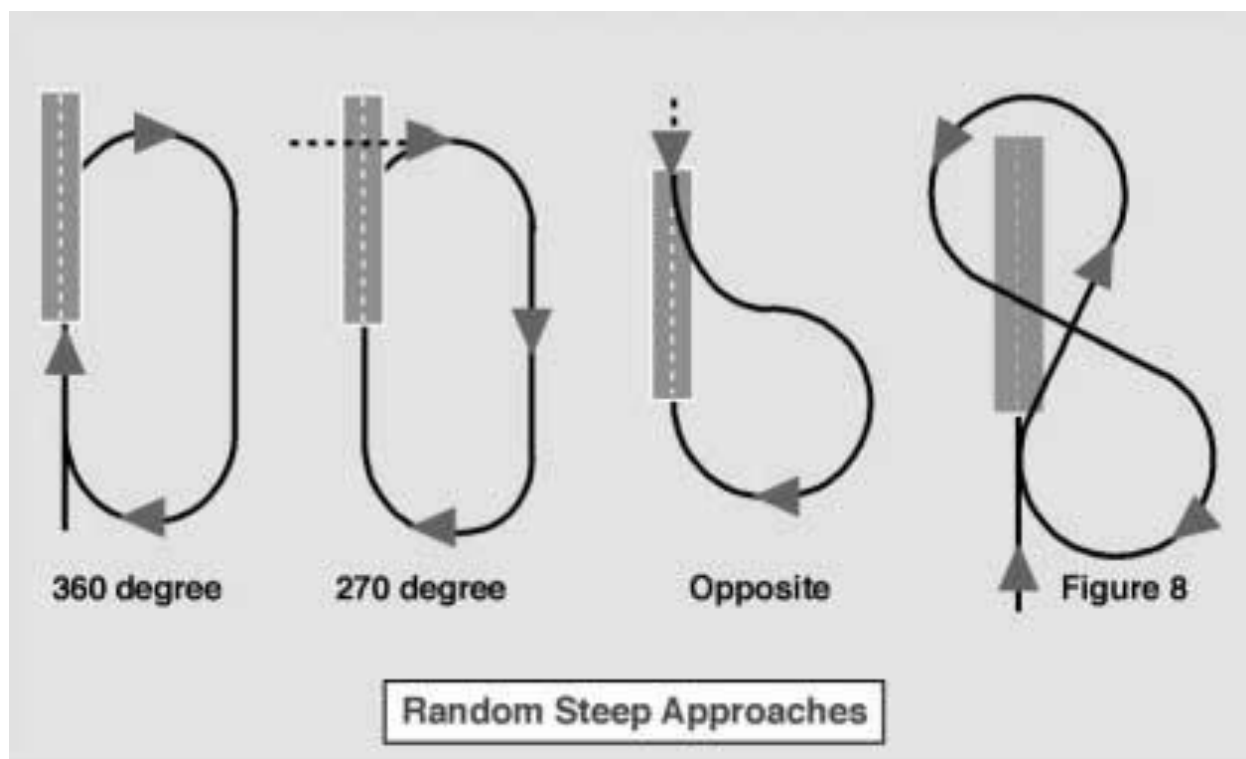


Figure 15.2. Random Shallow Straight-in Approach.

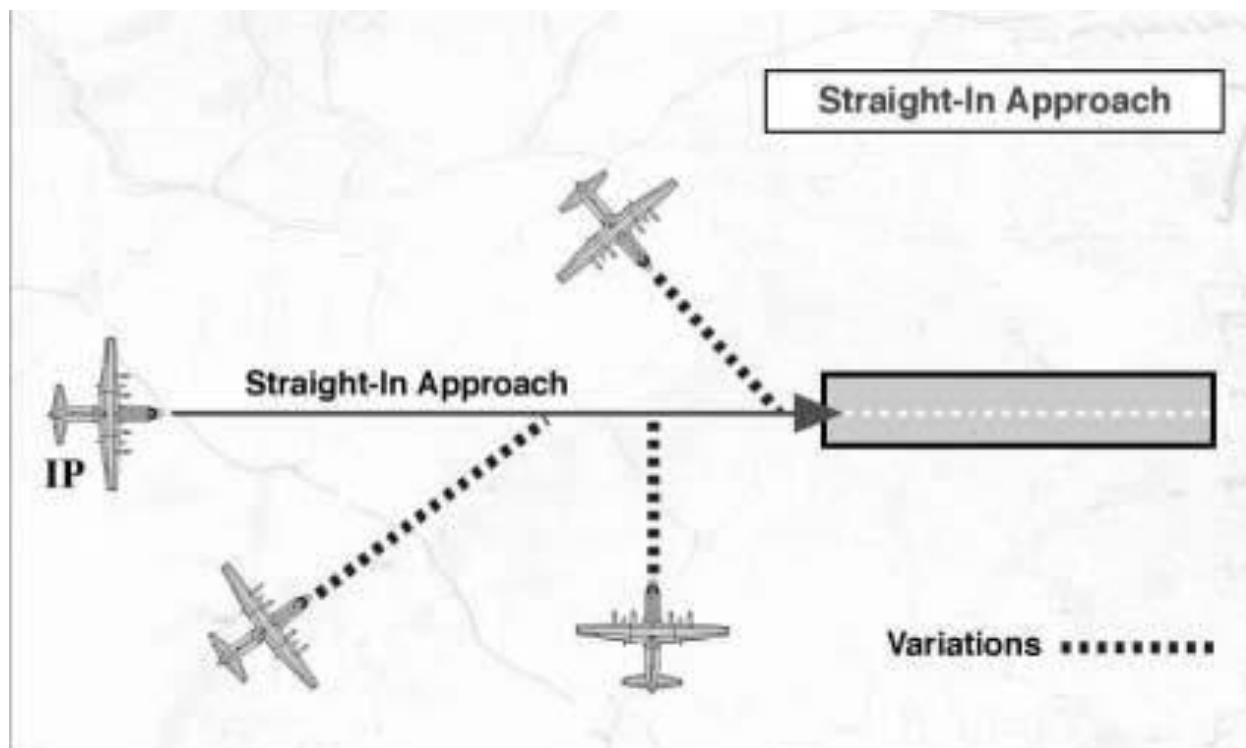
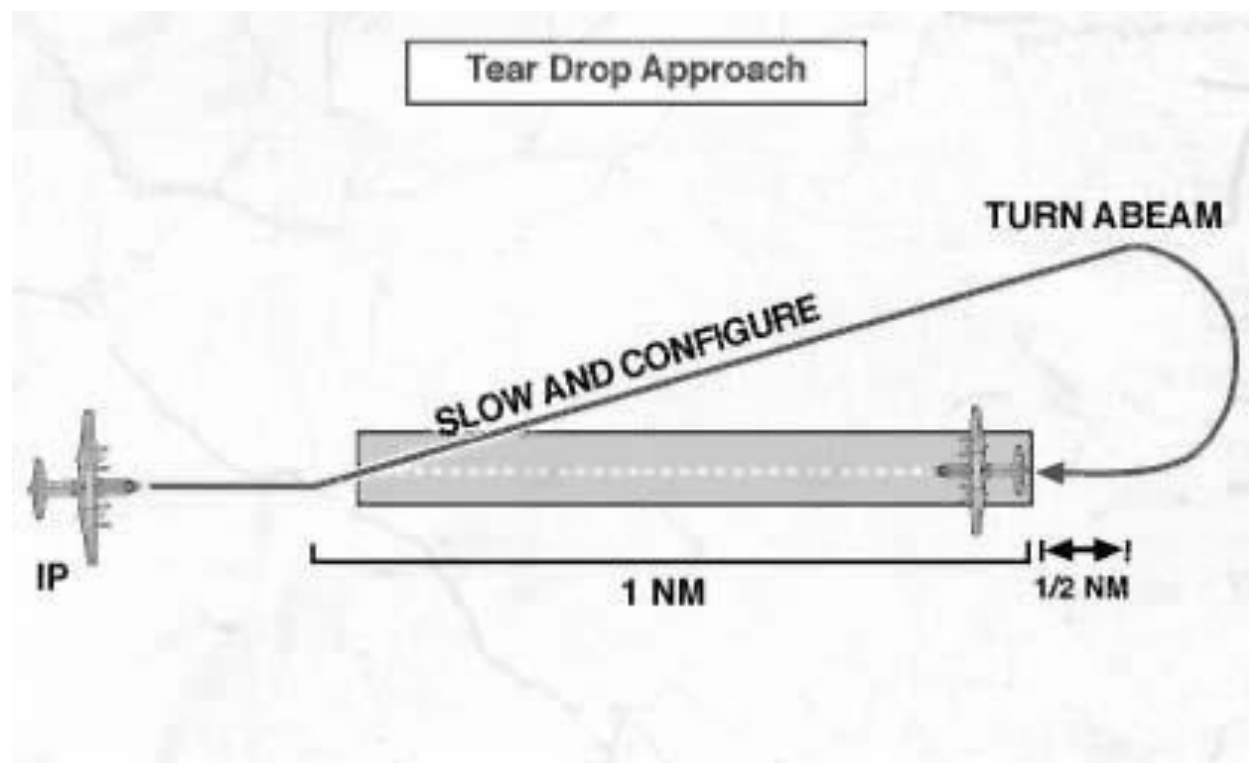


Figure 15.3. Random Shallow Tear Drop Approach.

15.23. AAR. NATO publication ATP 56(B) Parts 1 and 2 provide the basic guidance for refueling terminology and procedures. Crews will refer to the aircraft technical order for expanded receiver guidance and procedures. The following policies apply to all air to air refueling conditions regardless of emission control or type of rendezvous (RV): (T-2)

15.23.1. Minimum crew requirement. AAR qualified P, CP certified in AAR pre-contact, NAV certified in AAR and a FE certified in AAR (or in training under the supervision of an instructor). (T-2) **Exception:** PIC's may elect to have the NAV remain at the MOP during AAR as mission dictates. In this case the NAV may perform AAR duties from the MOP, as directed by the PIC.

15.23.2. Use manual boom latching procedures only during fuel emergencies and contingency operations. (T-2) **Exception:** Manual boom latching procedures are authorized for all AAR operations with the KC-10A if the tanker's independent disconnect system is operational. **WARNING:** Do not make HF radio transmissions during AAR operations. (T-2)

15.23.3. LAIRCM may be left in OPERATE mode during AAR.

15.24. Formation Procedures General. Formation is defined as aircraft maneuvering with respect to a common leader exercising mutual support for a common objective. For specific tactical formation employment reference 3-1 and 3-3.AC-130W (or equivalent). This section prescribes basic formation procedures. They are a guideline, primarily designed to be used in VMC. IMC procedures are employed in extraordinary circumstances when IMC is encountered inadvertently or when the mission demands IMC penetration.

15.24.1. Limit formations to three aircraft. (T-2)

15.24.1.1. Dissimilar Formations. Deployment operations may require different MDS AFSOC aircraft to fly together in formation. The minimum lateral spacing for different MDS aircraft will be 500 ft. If flight in visual conditions is not possible, use pre-briefed IMC procedures to provide separation between aircraft. The lead aircraft will direct wingmen to assume IMC spacing well prior to the formation entering the weather. For formation AAR use geometries and positioning described in ATP-56(B). (T-2) **WARNING:** When flying alternate formations it may be necessary to modify inadvertent weather penetration procedures.

15.24.2. Command and Control. Clear lines of command must be established during formation flight. This does not prevent other formation members from suggesting a course of action. Personnel in the following roles will be identified during mission planning and will be annotated on the flight orders (unless noted otherwise): (T-2)

15.24.2.1. Airborne Mission Commander (AMC). The individual responsible for the overall safe and effective employment of air assets. Required where mission complexity dictates. The AMC should not be a primary crew member. When communicating to the rest of the formation as the airborne mission commander, use that call sign. (T-2)

15.24.2.2. Formation Commander. Required on every formation mission. The designated commander of a formation of aircraft and responsible for successful completion of the formation's portion of the mission. Usually chosen from the PICs involved in the mission (usually the lead pilot). The pilot of the lead aircraft (if not the airborne mission commander) is empowered to conduct the mission as planned including any planned alternates and immediate actions necessary for formation safety. The airborne mission commander has the responsibility to direct all other changes to the mission. The formation commander works closely with the AMC (if one is utilized) to accomplish the overall mission. The formation commander is usually designated DMC in missions employing a dedicated AMC. (T-2)

15.24.2.3. Deputy Mission Commander. Required on all missions employing a dedicated AMC, on all multi-element formation missions, and on all single-element formations of three aircraft or more. The DMC assumes command if conditions prevent the AMC from controlling the mission. The DMC may be a primary crew member, and is usually the Formation Commander on AMC controlled missions. (T-2)

15.24.2.4. Formation Lead. The lead aircraft in a formation flight. Responsible for proper mission execution and other immediate action events during a formation flight.

15.24.3. Specified Times. The mission commander determines the sequence of events and mission times based on staff input, fuel requirements, user needs, taxi distances, briefing requirements, etc. (T-2)

15.24.4. Pre-takeoff Procedures:

15.24.4.1. Taxi (formation taxi is optional). Minimum taxi interval is one aircraft length. (T-2)

15.24.4.2. Runway Positioning. Aircraft alternate sides with nose to tail clearance. If feed-on method is used, subsequent aircraft move into takeoff position as preceding aircraft start takeoff roll. This method is used when runway length or gross weight

demands the entire runway be used or maximum power be applied prior to brake release. (T-2)

15.24.5. Takeoff:

15.24.5.1. Interval. Minimum takeoff interval between aircraft in VMC is 15 seconds. (T-2)

15.24.5.1.1. If the weather does not allow a VMC departure the formation will depart single ship, minimum one minute separation, and rejoin after VMC conditions are attained. If VMC cannot be attained fly radar/TACAN in-trail. (T-2)

15.24.5.2. Application of Power. To prevent damage to succeeding aircraft, do not advance power above flight idle until takeoff roll is started. Use a smooth application of power to achieve takeoff torque. If full power is required prior to brake release ensure adequate separation or use feed-on method. Lead will pre-brief takeoff power settings. (T-2)

15.24.5.3. Abort During Takeoff. If an aircraft aborts during takeoff roll, the NAV/CSO, designated by the PIC, will immediately transmit on inter-plane frequency and the CP on primary ATC frequency (after completing emergency procedures requiring immediate action) the formation position and the word "Aborting" three times. For example, "Number 1 aborting, Number 1 aborting, Number 1 aborting." The aborting aircraft will clear the runway as expeditiously and as safely as possible. Succeeding aircraft will hold until the runway is clear. If takeoff run has already been started by succeeding aircraft, they will abort and clear the runway. (T-2)

15.24.6. En Route. In the ATC environment, all aircraft not in a standard formation (standard formation is defined as less than 1 mile horizontal separation and less than 100 ft vertical, IAW FAA) will be fully lighted as required by AFI 11-202, Vol 3. (T-2)

15.24.6.1. At night, lead will announce unplanned airspeed changes of greater than 15 knots, unless briefed otherwise. (T-2)

15.24.6.2. Aircraft aborting after assembly will notify lead and turn away from the formation and rejoin at the end or proceed to a suitable recovery field. Aircraft within flight will reposition as briefed. (T-2)

15.25. Formation AAR.

15.25.1. Weather Minimums. RV closure will not be continued inside 1 sm unless visual contact is established with the tanker. AAR will not be continued when in-flight visibility is deemed insufficient for AAR operations. Lead is responsible for weather avoidance during the RV until ½ nm from contact. Any aircraft in the formation may advise the formation of inclement weather on the refueling track. (T-2)

15.25.2. Lead will direct the formation to either a right echelon or in-trail (IMC), stacked up 500 ft, prior to the entry point or rendezvous initial point (RVIP). Lead will call out the base altitude and occupy that altitude while maintaining 1,000 ft separation between the highest receiver and lowest tanker. (T-2)

15.25.2.1. If visibility is 2 nm or greater. Wingmen maintain a loose visual, 300 ft nose-to-tail clearance and 150 ft lateral wingtip clearance until lead calls AAR complete. Lead

will make this call on air refueling frequency when established in a loose visual position on the tanker's left wing. After lead calls AAR complete, number two is cleared to pre-contact. Number two calls AAR complete on air refueling frequency when established on lead's left wing. After number two AAR complete, number three is cleared to pre-contact. Number three will call AAR complete when established on lead's left side. (T-2) **WARNING:** Do not cross behind an aircraft in pre-contact/contact. (T-2)

TOD D. WOLTERS, Lt Gen, USAF
Deputy Chief of Staff for Operations

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TO 11A10-25-7, *Specialized storage and Maint Procedures Pyrotechnic Markers, MK-1MOD 3/B11690 MK2/344505 MK25 MOD 3/LD615141 or 1332145 M59/78-0-68*, 12 July 2002

TO 11A10-26-7, *Specialized Storage and Maint Procedures Pyrotechnic Signals*, 23 April 2012

Adopted Forms

DD Form 175, *Military Flight Plan*
DD Form 175-1, *Flight Weather Briefing*
DD Form 365-4, *Weight and Balance Clearance, Form F*
DD Form 1385, *Cargo Manifest*
DD Form 1801, *DoD International Flight Plan*
DD Form 2131, *Passenger Manifest*
AF Form 15, *USAF Invoice*
AF Form 70, *Pilot's Flight Plan and Flight*
AF Form 72, *Air Report (AIREP)*
AF Form 457, *USAF Hazard Report*
AF Form 523, *USAF Authorization to Bear Firearms*
AF Form 651, *Hazardous Air Traffic Report (HATR)*
AF Form 711B, *USAF Mishap Report*
AF Form 847, *Recommendation for Change of Publication*
AF Form 1297, *Temporary Issue Receipt*
AF Form 2282, *Statement of Adverse Effect – Use of Government Facilities*
AF Form 4051, *Low-level Flight Plan and Log*
AF Form 4064, *C130 Takeoff and Landing Data*
AF Form 4108, *C130 Fuel Log*, 14 April 2003
AF Form 4116, *C130 Navigation Flight Plan and Log*
AF Form 4118, *SCA Planning Form*
AF Form 4121, *FCIF Currency Record*
AF Form 4139, *Special Operations C130 CS Inflight Refueling Worksheet*
AF Form 4327A, *Crew Flight Authorization (FA)*
AFTO Form 46, *Prepositioned Aircrew Flight Equipment*
AFTO Form 350, *Reparable Item Processing Tag*
AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*
AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*
AFSOC Form 88, *Dedicated Crew Chief Trip Report*
AFSOC Form 97, *AFSOC Aircraft Incident*
CBP Form 6059B, *Customs Declaration*

CBP Form 7507, *General Declaration (Outward/Inward) Agriculture, Customs, Immigration and Public Health*

Abbreviations and Acronyms

AAR—Air to Air Refueling

AC—Alternating Current

ACC—Air Combat Command

ACM—Additional Crew Member/Airspace Control Measures

ACP—Allied Communications Publication

ADC—Air Data Computer

ADI—Attitude Direction Indicator

ADIZ—Air Defense Identification Zone

ADT—Air Data Transducers

AETC—Air Education Training Command

AF—Air Force

AFE—Aircrew Flight Equipment

AFI—Air Force Instruction

AFJI—Air Force Joint Instruction

AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFSAS—Air Force Safety Automated System

AFSOC—Air Force Special Operations Command

AFSOC/A3V—Headquarters Air Force Special Operations Command/Standardization/Evaluation

AFSOF—Air Force Special Operations Forces

AFTO—Air Force Technical Order

AFTTP—Air Force Tactics Techniques and Procedures

AG—Aerial Gunner

AGE—Aerospace Ground Equipment

AGL—Above Ground Level

AHS—Ammunition Handling System

AIMS—Airlift Implementation and Monitoring System

AIREP—Air Report
ALS—Approach Light System
ALT—Alternate
AMC—Air Mobility Command/Airborne Mission Commander
ANG—Air National Guard
AOR—Area of Responsibility
APU—Auxiliary Power Unit
ARA—Airborne Radar Approach
ARMS—Aviation Resource Management Systems
ASRR—Airfield Suitability and Restrictions Report
ATC—Air Traffic Control
ATO—Air Tasking Order
ATOC—Air Terminal Operations Center
AVPOL—Aviation Petroleum, Oil, and Lubricants (AVPOL)
AVT—Automatic Video Tracking
BAQ—Basic Aircraft Qualified
BFT—Blue Force Tracker
BMC—Basic Mission Capable
C2—Command and Control
C3—Command, Control, and Communications
CARP—Computed Air Release Point
CAS—Close Air Support
CAT—Category
CC—Commander
CCT—Combat Control Team
CD-ROM—Compact Disc Read Only Memory
CF—Customs Form
CFP—Computer Flight Plan
CHOP—Change in Operational Control
CHUM—Chart Updating Manual
CLO—Combat Logistics Operations
CLT—Common Launch Tube

CNDC—Canadian National Defense Contract
COMAFSOF—Commander Air Force Special Operations Forces
COMSEC—Communications Security
CONUS—Continental United States
COP—Common Operating Picture
CP—Command Post/Copilot
CSAR—Combat Search and Rescue
CSS—Concurrent Servicing Supervisor
CUI—Consolidated Unit Inspection
CVR—Cockpit Voice Recorder
DA—Decision Altitude
DCS—Decompression Sickness
DER—Departure End of Runway
DESC—Defense Energy Support Center
DFDR—Digital Flight Data Recorder
DFSC—Defense Fuel Supply Center
DH—Decision Height
DMC—Deputy Mission Commander
DNIF—Duty Not Involving/Including Flight
DoD—Department of Defense
DOT—Department of Transportation
DR—Dead Reckoning
DSN—Defense Switching Network
DSO—Direct Support Operator
DSR—Deployed Status Report
DST—Degraded Systems Training
DTG—Distance to Go
DV—Distinguished Visitor
DVS—Doppler Velocity System
DZ—Drop Zone
DZC—Drop Zone Controller
DZCO—Drop Zone Control Officer

EAR—End Air Refueling
EEBD—Emergency Escape Breathing Device
EFB—Electronic Flight Bag
EOD—Explosive Ordnance Disposal
EP—Emergency Procedure/Evaluator Pilot
EPOS—Emergency Passenger Oxygen System
E-Pubs—Electronic Publications
ER—Exceptional Release
ERO—Engines Running Onload/Offload
ESTAT—Execution Status and Monitoring
ETA—Estimated Time of Arrival
ETCAS—Enhanced Traffic Alert and Collision Avoidance System
ETB—Estimated Time in Blocks
ETD—Estimated Time of Departure
ETE—Estimated Time En route
ETP—Equal Time Point
F—Fahrenheit (degrees)
FA—Flight Authorization
FAA—Federal Aviation Administration
FAF—Final Approach Fix
FBO—Fixed Base Operator
FC—First Copilot
FCF—Functional Check Flight
FCG—Foreign Clearance Guide
FCIF—Flight Crew Information File
FCIS—Flight Crew Information Summary
FDP—Flight Duty Period
FE—Flight Engineer
FIH—Flight Information Handbook
FIR—Flight Information Region
FL—Flight Level
FLIP—Flight Information Publication

FOB—Forward Operating Base
FOD—Foreign Object Damage
FP—First Pilot
FS—Flight Station
FSAF—First Suitable Airfield
GCAS—Ground Collision Avoidance System
GD—Ground Distance
GDSS—Global Decision Support System
GFC—Ground Forces Commander
GMT—Greenwich Mean Time
GNC—Global Navigation Chart
GPS—Global Positioning System
GS—Ground Speed
GWS—Gun Weapon System
HALO—High-Altitude Low-Opening
HAHO—High-Altitude High-Opening
HAT—Height Above Touchdown
HATh—Height Above Threshold
HATR—Hazardous Air Traffic Report
HERK—Hostile Environment Repair Kit
HARP—High-Altitude Release Point
HF—High Frequency
HQ—Headquarters
IAS—Indicated Airspeed
IAW—In Accordance With
ICAO—International Civil Aviation Organization
IDCU—Integrated Digital Control Unit
IFF—Identification Friend or Foe
IFR—Instrument Flight Rules
ILS—Instrument Landing System
IMC—Instrument Meteorological Conditions
INS—Inertial Navigation System

IOAT—Indicated Outside Air Temperature
IP—Instructor Pilot
IR—Infrared
JA/ATT—Joint Airborne/Air Transportability Training
JFIRE—Joint Application of Firepower
J-Laser—Joint Laser Designation Procedures
JMD—Jumpmaster Directed
JMEM—Joint Munitions Effectiveness Manual
JNC—Jet Navigation Chart
JSOAC—Joint Special Operations Air Component
JSOTF—Joint Special Operations Task Force
LAIRCM—Large Aircraft Infrared Countermeasures
LI—Laser Illuminator
LPU—Life Preserver Unit
LRC—Logistics Readiness Center
LSAF—Last Suitable Airfield
LUT—Local User Terminal
MAF—Mobility Air Force
MAJCOM—Major Command
MAP—Missed Approach Point
MARSA—Military Assumes Responsibility for Separation of Aircraft
MC—Mission Copilot/Mission Contributing
MDA—Minimum Descent Altitude
MDS—Mission Design Series
ME—Mission Essential
MEA—Minimum En route Altitude
MEP—Mission Essential Personnel
MIL—Military
MHE—Materials Handling Equipment
MHz—Megahertz
mm—Millimeter
MNPS—Minimum Navigation Performance Specifications

MOA—Memorandum of Agreements
MOP—Mission Operator Pallet
MP—Mission Pilot
MSA—Minimum Safe Altitude
MSC—Multi-Service Corporation
MSL—Mean Sea Level
MXG—Maintenance Group
NAV—Navigator
NAVAID—Navigational Aid
NC—Noncurrent
NDB—Non Directional Beacon
NEW—Net Explosive Weight
nm—Nautical Mile
NOPAC—North Pacific
NVG—Night Vision Goggle
OAP—Offset Aiming Point
OB—Order of Battle
OG/OGV—Operations Group Standardization/Evaluation
OPCON—Operational Control
OPREP—Operations Report
ORE—Operational Readiness Exercise
ORM—Operational Risk Management
OSC—On-Scene Commander
OVRD—Over Ride
P—Pilot
PA—Privacy Act
PAR—Precision Approach Radar
PBE—Personal Breathing Equipment
PEX—Patriot Excalibur
PF—Pilot Flying
PFPS—Portable Flight Planning System
PGM—Precision Guided Munitions

PI—Probability of Incapacitation or Point of Impact

PIC—Pilot in Command

PM—Pilot Monitoring

POL—Petroleum, Oil and Lubricants

PSP—Pierced Steel Planking

PT—Physiology Technician

RCC—Rescue Coordination Center

RCO—Range Control Officer

RCR—Runway Condition Reading

RDS—Records Disposition Schedule

ROZ—Restricted Operating Zone

RSC—Runway Surface Covering

RV—Rendezvous

RVIP—Rendezvous Initial Point

RVR—Runway Visual Range

SA—Situational Awareness

SAR—Search and Rescue

SARSAT—Search and Rescue Satellite

SATCOM—Satellite Communication

SCA—Self-Contained Approach

SCNS—Self-Contained Navigation System

SDB—Small Diameter Bomb

SF—Standard Form

SID—Standard Instrument Departure

SIF—Selective Identification Feature

SITCO—Shell International Trading Company

SLTA—Small Laser Turret Assemblies

sm—Statute Mile

SOC—Special Operations Command

SOF—Special Operations Forces

SPINS—Special Instructions

STAR—Standard Terminal Arrival Route

STS—Special Tactics Squadron
SUA—Special Use Airspace
SWLS—Switchable Wavelength Laser Subsystem
TACAN—Tactical Air Navigation
TACON—Tactical Control
TAS—True Airspeed
TBMCS—Theater Battle Management Core Systems
TCAS—Traffic Collision Avoidance System
TDZE—Touchdown Zone Elevation
TDY—Temporary Duty
TGM—Trainable Gun Mount
TIT—Turbine Inlet Temperature
TLM—Topographical Line Map
TO—Technical Order
TOAT—Total Outside Air Temperature
TOLD—Takeoff and Landing Data
TOT—Time Over Target
TRANSEC—Transmission Security
TSO—Tactical Systems Operator
TSOC—Theater Special Operations Command
UHF—Ultra High Frequency
UNQ—Unqualified
USAFWS—USAF Weapons School
USSOCOM—United States Special Operations Command
VCSL—Voice Call Sign Listing
VFR—Visual Flight Rules
VHF—Very High Frequency
VOR—VHF Omnidirectional Radio
VMC—Visual Meteorological Conditions
VMCA—Air Minimum Control Speed
V_r—Refusal speed
WIC—Weapons Instructor Course

WPS—Weapons School

WPT—Waypoint

WST—Weapon System Trainer

Terms

AFKAI—Contains the worldwide USAF voice call sign list and the specific assignment of each to USAF, JCS, Army, Navy, unified and specified commands, and certain Executive, State Department, and DoD activities.

Air to Air Refueling (AAR)—Airborne fuel onload by receiver aircraft.

Air Reserve Components (ARC)—Units of the Air Force Reserve (AFRC) or Air National Guard (ANG).

Airborne Mission Commander (AMC)—The individual given the responsibility to accomplish part of the overall operation. When a formation is used to conduct the operation, this individual is in overall command of all formation aircraft.

Basic Proficiency—Crews or crew members qualified and current to fly the unit aircraft only on non-mission sorties.

Basic Mission Capable—Crews or crew members qualified and current to perform some portion of the unit mission, but who do not maintain mission ready status.

Boomer—Gunship slang referencing a re-ignition of propellant gasses after a projectile leaves the muzzle.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunization requirements.

Category I Route—Any route that does not meet the requirements of a category II route, including low level and overwater routes.

Category II Route—Any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (NDB, VOR, TACAN) at least once each hour with positive course guidance between such radio aids.

Chalk Number—A number on an aircraft to identify and designate its position for loading and unloading.

Combat Control Team (CCT)—A team of AF personnel organized, trained, and equipped to establish and operate navigational or terminal guidance aids, communications, and aircraft control facilities in support of mission operations.

Combat Entry Point—A geographical point inbound to the objective area where the hostile environment is penetrated.

Combat Offload—Method by which palletized cargo is offloaded without Materials Handling Equipment (MHE).

Command and Control Center (C3)—An agency used by a commander to plan, direct, or control operations. Each C3 provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this instruction, C3s include the AFSOC Command Center,

AMC Command Center, Command Post (CP), Air Mobility Elements (AME), Airlift Coordination Centers, Combat Control Teams (CCT), AFRC Headquarters Command Post (AFRC HQ CP), NGB Field Support Center, and ARC wing or group operations centers and command posts.

Commander Air Force Special Operations Command (COMAFSOC)—The Commander of Air Force Special Operations Command.

Commander Air Force Special Operations Forces (COMAFSOF)—The commander designated by USCINCSOC for CONUS deployments or by theater SOC/CCs for overseas deployments, who is responsible for management of Air Force Special Operations Forces (AFSOF) within a theater, a geographic area, or a designated operation. The COMAFSOF is responsible to USCINCSOC for management of CONUS-deployed AFSOF or to the respective SOC/CC for management of AFSOF theater-assigned AFSOF and is responsible to COMAFSOC for monitoring and management of AFSOF operating within the specific area of responsibility.

Computed Air Release Point (CARP)—A computed air position at which the release of personnel, equipment, containers, and bundles is initiated to land on a specific point of impact (PI).

Conference HOTEL—The name of the communication conference available to assist aircrews in coping with inflight emergencies and conditions that require expertise in addition to that available on board the aircraft.

Contingency Mission—A mission operated in direct support of an operation plan, operation order, disaster, or emergency.

Deadhead Time—Duty time accrued by crew members in a passenger or ACM status.

Drop Zone Controller (DZC)—An individual on a drop zone required to monitor all airdrop operations except airdrop of Special Forces.

Element—A subdivision (normally 3 aircraft) flying in formation.

Equal Time Point (ETP)—The point along a route at which an aircraft may either proceed to the first suitable airport or return to the last suitable airport in the same amount of time based on all engines operating.

Firing Zone—The area on the ground in which the bullets will impact. Its size is determined by the boresighted gun pattern and bullet dispersion.

Forward Operating Base (FOB)—An airfield without full support facilities used during mission operations for an undetermined and sometimes extended period of time.

Hazardous Cargo or Materials—Explosive, toxic, caustic, nuclear, combustible, flammable, biologically infectious, or poisonous materials that may directly endanger human life or property, particularly if misused, mishandled or involved in accidents (AFJI 11-204, AFMAN 24-204, TO 11N-20-11).

Hot Gun—A situation when a live round or rounds cannot be cleared from a weapon inflight, the gun cannot be mechanically and electrically rendered safe, and a probability of inadvertent firing exists.

Hung Ordnance—Any ordnance or stores that fail to release, jettison, or fire and cannot be removed from the weapon prior to landing (ALE-40/47 chaff or flare squibs that fail to fire are not considered hung ordnance).

Inert Ordnance—Ordnance with the explosive or incendiary material removed or ordnance designed for training.

Initial Point—A point near drop zones or landing zones over which final course alterations are made to arrive at the specified zone.

Integrated Tasking Order—The Republic of South Korea's version of the US Air Tasking Order.

Interfly—Intermixing of crew members from different units in the same aircrew or unit aircrews flying aircraft assigned to another unit.

Jammed Gun—A gun containing ammunition that cannot be cleared from the gun in flight, but can be rendered mechanically safe, no probability of inadvertent firing exists.

Joint Special Operations Task Force (JSOTF)—A joint task force composed of special operations units from more than one Service, formed to carry out a specific special operation or prosecute special operations in support of a theater campaign or other operations. The joint special operations task force may have conventional non-special operations units assigned or attached to support the conduct of specific missions.

Live Ordnance—Combat type ordnance incorporating explosive or incendiary material to include flares.

Load Message—An operational immediate message electronically transmitted from departure station listing pertinent traffic and operational data.

Low Level—Operations, other than landings, approaches, and transitions, conducted below 1,000 ft above ground level.

Maintenance Codes:—

Fully Mission Capable (FMC).

Partially Mission Capable (PMC).

+ M (Maintenance).

+ S (Supply).

+ B (Both).

Not Mission Capable (NMC).

+ M (Maintenance).

+ S (Supply).

+ B (Both).

Military Authority Assumes Responsibility for Separation of Aircraft (MARSA)—A condition whereby the military services involved assume responsibility for separation between participating aircraft in the air traffic control (ATC) system.

Minimum Safe Altitude (MSA)—MSA is an intermediate altitude which will provide terrain clearance in VMC or IMC.

Mission Ready—Crews or crew members fully qualified and current to perform the unit mission.

Night Vision Goggles (NVG)—Self-contained, battery-operated devices that amplify light to enhance night vision.

Offset Aiming Point (OAP)—A reference, other than the actual target, used for aircraft positioning.

Operating Weight—Basic aircraft weight plus weight of crew members, crew baggage, steward's equipment, emergency and extra equipment.

Operational Control (OPCON)—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission.

Payload—The combined weight of passengers, baggage, and cargo carried on a mission.

Point of Impact (PI)—The point on the drop zone where the first airdropped parachutist or cargo item lands or is expected to land.

Popeye—In air intercept, a code meaning, "In clouds or area of reduced visibility." In gunship air-to-surface, a code meaning a visual sensor is no longer able to track the target due to clouds or area of reduced visibility.

Quick Turn—A set of procedures designed to expedite the movement of selected missions by reducing ground times at en route or turnaround stations.

Rendezvous Control Point (RVCP)—The planned geographic point over which the receiver(s) arrive in the observation/astern position with respect to the assigned tanker.

Rendezvous Initial Point (RVIP)—A planned geographic point prior to the RVCP to which tankers and receivers time independently to effect an arrival at the RV control time. If the tanker/receiver is not already at its assigned RV FL/altitude, it commences a climb/descent to that FL/altitude. This point may be a designated position established at the planning or briefing stage, or as directed by the tanker/GCI/AEW controlling the RV.

Self—Contained Approach (SCA)—An approach conducted using self-contained, onboard navigation systems.

Serial—Any number of aircraft under a commander, usually conveying a unit to a landing, extraction, or drop zone.

Special Tactics Squadron (STS)—Air Force special operations combat control and pararescue forces.

Standby Force, Aircraft, or Crews—Designated aircraft and crews capable of being launched in less than the normal alert-to-takeoff time period.

Station Time (Air Force)—A specified time at which aircrew, passengers, and material are to be in the aircraft and prepared for flight. Passengers will be seated and loads tied down. Aircrews will have completed briefing and aircraft preflight inspection prior to station time. Normally, station time will be 30 minutes prior to takeoff time.

Station Time (Airborne)—A specified time when parachutists will be seated in the aircraft with seat belts fastened. This time normally will be 5 minutes prior to Air Force station time.

Supported Forces—Space-required passengers consisting of US and foreign military members who are on board an AFSOC aircraft as an integral part of the mission being performed.

Supporting Forces—Space-required passengers consisting of US and foreign military members, DoD civilians, and US civilian employees under contract to the DoD, who directly support the mission or deployment of an AFSOC unit.

Tactical Control (TACON)—Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. Tactical is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command.

Time of Fall—The time in seconds for a projectile to travel from the gun muzzle to the target.

Time Over Target (TOT)—The actual time an aircraft is at a geographic point or area carrying out an assigned mission.

Tweak—A computation performed either manually or by fire control computer to correct for errors in weapon or sensor alignment and to solve for the ballistic wind. The purpose of performing a tweak is to cause ordnance to impact on target.

Zero Fuel Weight (Actual)—The actual zero fuel weight of an aircraft plus the weight of the cabin load (cargo, passengers, troops, and munitions).

Zero Fuel Weight (Maximum)—That weight expressed in pounds where an addition to the aircraft gross weight can be made only by adding fuel in wing tanks. This value is referred to as "Limiting Wing Fuel."

Attachment 2

PERSONNEL AIRDROP

A2.1. High-Altitude Personnel Airdrop Planning.

A2.1.1. Airdrop Planning. Airdrops may be conducted in IMC and VMC. For detailed information on drop zone (DZ) sizes, markings, types, and weather and wind limits, refer to AFI 13-217, *Drop Zone and Landing Zone Operations*. For information on aerial delivery airspeeds and altitudes, refer to AFI 11-231, *Computed Air Release Point Procedures*. AFI 13217 wind limits take precedence if there are discrepancies between AFI 13-217 and AFI 11231.

A2.1.1.1. The PIC and the NAV will review the DZ survey during mission planning/route study. (T-2)

A2.1.1.2. Airdrop Computations. During mission planning, the NAV will compute a HARP using AF Form 4015, AF Form 4017, or approved computer-aided HARP program. Both the navigator and CSO will verify the results. At the aircraft, the navigator will verify the actual number of jumpers and parachute type matches the planned HARP data. (T-2)

A2.1.1.3. Only equipment rigged in accordance with TO 13C7-series and FM 10-500-series or USSOCOM 350-series rigging manuals, properly marked with accurate weights and shipper's declarations will be airdropped. Nonstandard equipment and loads require specific instructions and waivers from AFSOC/A3V (AFRC/A3V for AFRC approved missions) and AFSOC/A3VW prior to airdrop. (T-2)

A2.1.1.4. Minimum en route time from takeoff to time over release point will be sufficient to safely accomplish all required checklists. For airdrop involving personnel, the jumpmaster must approve en route time of less than 25 minutes. (T-2)

A2.1.1.5. Jumpmaster directed (JMD) personnel airdrops require unit/mission commander approval (SOG/CC may delegate lower). The user accepts all responsibility for airdrop accuracy and damage to equipment or injury to personnel. (T-3)

A2.1.1.5.1. Specific in-flight visual signals, verbal signals, and interphone procedures will be coordinated between the jumpmaster and crew. (T-2)

A2.1.1.5.2. NAVs will accomplish a computed air release point (CARP) or high-altitude release point (HARP) calculation to verify the jumpmaster's computations and in-flight directions. (T-2)

A2.1.1.5.3. NAVs will update the jumpmaster in-flight on actual wind information and any changes to the briefed computed CARP/HARP location. (T-2)

A2.1.1.5.4. After the slowdown checks are completed, the AG permits the jumpmaster access to the door to begin spotting procedures. The slowdown should be adjusted to allow the jumpmaster to begin spotting procedures not less than two minutes out. The jumpmaster will visually relay steering signals to the AG to relay to the P. The jumpmaster may spot from the aircraft ramp or a paratroop door. (T-2)

A2.1.1.5.5. One minute prior to the NAV's release point (or as briefed), the PM turns on the green light to indicate clearance for the jumpmaster to make a final decision as to the exact exit point. Jumpers may exit on the jumpmaster's direction while the green light is illuminated. The red light is turned on at the end of the NAV's computed usable DZ distance and time or when the last jumper or load exits, whichever comes first. No jumpers should exit after the red light is turned on. (T-2)
Note: The AG will not attempt to stop any remaining parachutists after the red light has been illuminated. The AG will count any parachutists that exit the aircraft after the red light has illuminated. (T-2)

A2.1.1.5.6. JMD releases will not be mixed with any other type of airdrop method. If JMD drop procedures are called for, the crew will follow the jumpmaster's instructions, while adhering to normal safety concerns. Should the crew believe the drop would occur outside of safe parameters, they will call "No Drop" and ensure the red light is illuminated. (T-2)

A2.1.1.6. Crews will not perform airdrops using parachutes for which AFI 11-231 does not list ballistics unless the user provides ballistic data or K-factor that has been verified by AFSOC/A3VW. Aeronautical Systems Division (ASD/ENFC), or US Army Soldier's System Center Natick can also approve ballistic data or K-factors. This does not apply to formal test missions where the purpose of the test is to derive ballistic data for a specific load. (T-2)

A2.1.2. Communication Procedures. The pilot flying the airdrop will accomplish the brief associated with the 20-minute warning. (T-2)

A2.1.2.1. Training Operations. Radio transmissions with the drop zone (DZ) are those required for safety of flight considerations or factors effecting airborne force employment. This includes ATC directions, range clearance, unsafe surface conditions or mission changes. When the mission dictates radio silence, transmission of wind information and range or drop clearance is not required. Radio silence procedures will be coordinated prior to mission execution. (T-2)

A2.1.2.2. Drop clearance is normally inherent with mission clearance to unmanned DZs. The aircrew observing the proper briefed authentication confirms drop clearance in VMC. A no-drop or mission cancellation is communicated by the absence of pre-briefed markings (visual or electronic), jumbled block letter, observation of the block letter X, or red smoke, light, or flare.

A2.1.2.3. In IMC, drop clearance is confirmed via radio call or beacon acquisition. In IMC, a no-drop or mission cancellation is communicated by an authenticated radio transmission or absence of the beacon.

A2.1.3. Ramp and Door and Paratroop Door Operations. **WARNING:** The ramp and door and paratroop doors will not be open at the same time during flight. (T-2)

A2.1.3.1. The P may direct ramp and door/paratroop door opening any time after the six-minute advisory has been completed and clearance from the AG is received. This option must be planned and briefed prior to execution. Consider added drag, power available, climb requirements, built up areas, and the possibility of dropped objects when the door is opened. (T-2)

A2.1.3.2. Multiple Passes (i.e., Racetracks). When performing multiple personnel drops across the same DZ, checklists may resume at the 6-minute warning assuming no airdrop parameters or aircraft configuration changes are made from the previous drop. Ensure the AG has adequate time to complete all checklist items before the drop. (T-2)
Exception: During pilot directed airdrops, the checklist may be initiated at a point commensurate with the available time and type of drop. This will be coordinated at the briefing between the crew and jumpmaster. When airdrop parameters or aircraft configuration changes are made between drops, all checklists will be accomplished. Airdrop time advisories and checklists may be compressed, except for the one minute warning. Doors may remain open at the discretion of the PIC. (T-2)

A2.1.3.3. If an air deflector door cannot be opened, its respective paratroop door will not be used. (T-2)

A2.1.4. Airdrops conducted above 3,000 ft AGL are considered high-altitude drops. For high-altitude low-opening (HALO), positive identification of the drop zone area must be confirmed electronically or visually prior to calling the release. For HALO or high-altitude high-opening (HAHO), all available navigational aids will be used to assist in positioning the aircraft over the HARP. (T-2)

A2.1.4.1. To the maximum extent possible on training and exercise missions, unless prevented by airspace restrictions or other mission factors, update the preflight winds at each altitude used to compute the high-altitude release point (HARP). Obtain these winds as near the DZ as possible. (T-2)

A2.1.4.2. High-altitude Mission Requirements. In addition to the normal mission planning requirements, the following are unique to high-altitude operations:

A2.1.4.2.1. Aircrew will ensure all aspects of HALO/HAHO airdrops are discussed in detail at the aircrew/jumpmaster briefing. Insist on positive feedback when discussing HARP location and wind data as well as resolving what items will be passed to the jumpmaster during flight. Terminology should be clear and unambiguous. (T-2)

A2.1.4.2.2. For all HALO/HAHO operations, NAVs will provide the jumpmaster with a magnetic course +/- 5 degrees and a distance from the release point to the drop zone. In-flight changes to the HARP location or significant wind changes will be relayed to the jumpmaster as soon as possible. (T-2)

A2.1.4.3. Cabin differential pressure will be managed to have cabin altitude equal to the ambient pressure prior to completion of the 10-minute checklist. Depressurization will not exceed 3,000 feet per minute. Pressurization after the drop will be maintained in accordance with mission requirements, but should return to a cabin altitude commensurate to the flight profile and duration as detailed in AFI 11-202, Vol 3 or below 10,000 ft MSL as soon as possible. (T-2)

A2.1.4.4. High-altitude Oxygen requirements. Only essential personnel who have accomplished appropriate physiological training described in AFI 11-403, *Aerospace Physiological Training Program*, are permitted on mission aircraft for airdrops. AFI 11-202, Vol 3 is the source document for oxygen requirements for unpressurized and pressurized aircraft operations and the associated time limitations. AFI 11-409, *High-*

altitude Airdrop Mission Support Program, is the source document for high-altitude oxygen, prebreathing, and Physiology Technician (PT) requirements/restrictions. (T-2)

A2.1.4.4.1. Incident Notification. USAF/SGPA and MAJCOM/SG will be notified by the most expeditious manner of any physiological incident. (T-2)

A2.1.4.4.2. General Emergency Procedures. If any person experiences decompression sickness or unusual pain, the pilot will: (T-2)

A2.1.4.4.2.1. Abort the mission and begin a descent (pressurization and descent will be determined by the type and degree of sickness or pain).

A2.1.4.4.2.2. Proceed to the nearest base at which qualified medical assistance is available. Advise the control tower of the emergency and request a flight surgeon and an ambulance to meet the aircraft.

A2.1.5. No Drop Decisions.

A2.1.5.1. Prior to the 2 minute warning; notify the PIC when any condition exists that could jeopardize a safe drop. (T-2)

A2.1.5.2. After the 2 minute warning, any crew member observing a condition that would jeopardize a safe drop will transmit "No Drop" on the interphone. (T-2)

A2.1.5.3. A "No Drop" will be called if all checklists are not completed by the "10 Second" call. (T-2)

A2.1.5.4. The PM, NAV, and AG will acknowledge the "No Drop" call. (T-2)

A2.1.5.5. Stopping a drop in progress. Any crew member recognizing an unsafe condition during an airdrop will state "Red Light." The PM will turn on the red light to signal airdrop termination. (T-2)

A2.1.5.6. On personnel airdrops where surface winds are unknown, advise the jumpmaster and the airborne ground force commander when drop altitude winds exceed 30 knots. In this instance, the decision to drop is at the user's discretion. (T-2)

A2.1.5.7. During training operations, the drop zone safety officer (DZSO) will determine when surface conditions on the DZ are hazardous to airdrop operations. (T-2)

A2.1.6. Safety Equipment/Precautions.

A2.1.6.1. Mobile crew members in the cargo compartment will wear helmets during all actual airdrop operations from the Twenty-Minute Warning through the completion of the airdrop checklist. (T-2)

A2.1.6.2. Eye Protection. All personnel aft of FS 617 should wear eye protection during any mission requiring doors to be open.

A2.1.6.3. Apply cloth-back tape over inboard CLT storage rack latches to avoid potential entanglement with parachutist and their equipment during exit. (T-2)

A2.2. High Altitude Personnel Airdrop Procedures.

A2.2.1. Initial Point (IP). Terrain permitting, the NAV will sequence steering to the airdrop leg in order to roll out on final course guidance without overshooting. (T-2)

A2.2.1.1. Departing the IP (or the slowdown point if one is programmed), the NAV and PM will confirm that the airdrop leg and sensitive steering are active. (T-2)

A2.2.1.2. The NAV will confirm DZ alignment with radar. The CSO will confirm DZ alignment and DZ status if possible. (T-2)

A2.2.1.3. The NAV and PM will visually confirm SCNS position using preplanned visual update points and provide corrections if required. (T-2) **WARNING:** The PF must be aware of paratroopers standing in the back and avoid abrupt pitch or bank changes after the Six Minute Advisory. (T-2)

A2.2.2. Slowdown. Slowdown at a distance commensurate with the proficiency of crew, atmospheric conditions (pressure altitude and outside air temperature), and the threat environment. (T-2)

A2.2.2.1. All controlled ETA procedures should be completed prior to reaching the slowdown point.

A2.2.2.2. After the navigator calls for the slowdown, the PF will acknowledge the slowdown call and reduce the throttles (0-1,000 in-lbs of torque). (T-2)

A2.2.3. Release point.

A2.2.3.1. During VMC operations, the PM and the NAV will confirm the aircraft is positioned within the pre-briefed VMC safety box. (T-2)

A2.2.3.2. During IMC operations, both pilots and the NAV will confirm the aircraft is positioned within the pre-briefed IMC safety box. (T-2)

A2.2.4. Escape. The NAV will call "Red Light" at the expiration of the usable DZ time or upon hearing the AG call "Load Clear," whichever occurs first. (T-2)

A2.2.4.1. Begin the escape procedure no earlier than the "Load Clear" call. (T-2)

A2.2.4.2. After the paratroop doors and air deflectors are closed and the flaps have been reconfigured, the remainder of the COMPLETION OF DROP checklist may be deferred if required for threat avoidance.

A2.2.5. Airdrop malfunctions and Off-DZ airdrops. Reporting of airdrop malfunctions and off-DZ airdrops will be AFJI 13-210 and AFI 13-217. Local reporting procedures will be detailed in the group or unit supplement to this instruction. (T-2)

A2.3. Amplified High-altitude Personnel Airdrop Checklists. Refer to **Tables A2.1-A2.4** (T-2)

Table A2.1. Amplified High-altitude Personnel Airdrop Checklist (P/CP/N/CSO/E).

TWENTY MINUTES

The "Crew, twenty minute warning" call will initiate this checklist.

Aerial Gunner will notify Jumpmaster of all time advisories/time warnings

- | | |
|----|-----------------------------------|
| 1. | "Crew, twenty minute warning" (N) |
| | "Acknowledged" (AG) |

- | | | |
|---|--|----------------------------------|
| | “Personnel airdrop,
tailgate/paratroop door exit” | (P) |
| 2. Helmet and oxygen mask (as required) | “On” | (P), (CP), (N), (CSO), (AG), (E) |
| 3. Slowdown, drop zone, and escape | “Reviewed” | (P), (CP), (N) |
| a. Briefed IAW Airdrop Briefing Guide | | |
| 4. Terminal data | “Checked” | (N) |

The Navigator will check the following (as required).

- | | | |
|---|------------------|-----|
| a. Correct IP-DZ | | |
| b. IP-DZ coordinates and elevation | | |
| c. Radar target coordinates and elevation | | |
| d. Airdrop ballistics | | |
| e. Radar offsets | | |
| 5. Pressurization | “Depressurizing” | (E) |

WARNING

If any person experiences signs of decompression sickness and/or unusual pain, notify the pilot in command.

Proceed to a location where qualified medical assistance is available. Notify the appropriate command and control agencies of the emergency.

If required, request medical support meet the airplane upon landing.

NOTE

Should the aircraft require re-pressurizing, do not pressurize cabin altitude below the set parachute activation altitude until all parachutes have been de-armed for high altitude airdrops.

- | | | |
|----------------------------|------------|-----------|
| 6. Twenty minute checklist | “Complete” | (AG), (E) |
|----------------------------|------------|-----------|

TEN MINUTES

The “Crew, ten minute warning” call will initiate this checklist.

- | | | |
|---------------------------------------|----------------------------|-------------------------------------|
| 1. | “Crew, ten minute warning” | (N) |
| | “Acknowledged” | (AG) |
| 2. Computer Jump Switch | “AD/TJ Manual” | (CP) |
| 3. Red light | “On” | (P/CP) |
| 4. Cabin altitude check (as required) | Complete | (P), (CP), (N), (CSO),
(AG), (E) |

- a. Mask – On and connected
- b. Oxygen regulators – ON
- c. Mask hose connection – Checked
- d. Regulator flow indicator – Checked
- e. Aircraft oxygen quantity – Checked

5. Aux pump (For Ramp and Door Exit Only) “On” (CP)

NOTE

When the aux pump is turned on, the engineer should note the ARM light illuminated on the ADS panel. If the ARM light extinguishes and/or the NO GO light illuminates prior to the ramp and door being opened, the AG will check the ADS arms or T-Handles.

6. Altimeters “Set, state setting” (P), (CP), (N)
 7. Pressurization “No Pressure” (E)
 8. Ten minute checklist “Complete” (AG), (E)

SIX MINUTES

The “Crew, six minute warning” call will initiate this checklist.

1. “Crew, six minute warning” (N)
 “Acknowledged” (AG)

SLOWDOWN

The “Slowdown now” call will initiate this checklist.

1. “Slowdown now” (N)
 2. Flaps “Set flaps, state setting” (P/CP)
 “Flaps set, state setting” (P/CP/E)

NOTE

Flaps will be set to 50% upon clearance from the Pilot flying and as airspeed permits.

3. Ramp and door / Paratroop doors “Clear to open” (AG), (P)
 “Opened and locked” (AG)
 “Indicates open” (E)

NOTE

The engineer will monitor and ensure that the ramp and door OPEN light on the ADS panel

remains illuminated for the entire drop. Failure of the light to illuminate or remain illuminated is considered a no drop condition.

NOTE

The engineer will open the ramp and door after receiving clearance and report "Indicates Open" when the ramp and door open light illuminates on the ADS panel.

NOTE

The ADS NO GO light will illuminate when the aft anchor cable supports are lowered. This is not an indication for a no drop condition.

5. Slowdown checklist	"Complete"	(AG), (E)
-----------------------	------------	-----------

TWO MINUTES

The "Crew, two minute warning" call will initiate this checklist.

1.	"Crew, two minute warning"	(N)
	"Acknowledged"	(AG)

ONE-MINUTE

The "Crew, one minute warning" call will initiate this checklist.

1.	"Crew, one minute warning"	(N)
	"Acknowledged"	(AG)

RELEASE POINT

The "Crew, ten seconds" call will initiate this checklist.

1.	"Ten seconds"	(N)
2.	"Green light"	(N)
	"On"	(P/CP)
3.	"Load clear" (Or Condition)	(AG)

NOTE

The navigator will monitor the timing for usable DZ length and call "Red light" at the expiration of the time or upon the aerial gunner's "Load clear" call.

COMPLETION OF DROP

The “Red light” call will initiate this checklist.

- | | | |
|------------------------------------|---------------------|--------|
| 1. | “Red light” | (N) |
| | “On” | (P/CP) |
| 2. Ramp and door / Paratroop doors | “Closed and locked” | (AG) |

NOTE

The engineer will ensure that the master door warning light extinguishes.

- | | | |
|---|----------------|-----------|
| 3. Flaps | “Up” | (P/CP) |
| | “Flaps are up” | (P/CP/E) |
| 4. Aux pump (For Ramp and Door Exit Only) | “Off” | (CP) |
| 5. Pressurization | “Set” | (E) |
| 6. Red light | “Off” | (P/CP) |
| 8. Drop checklist | “Complete” | (AG), (E) |

Table A2.2. Amplified AG High-Altitude Personnel Airdrop Checklist – Ramp and Door Exit.

TWENTY MINUTES

The “CREW, TWENTY MINUTE WARNING” call will initiate this checklist.

- | | | |
|---|----------------|-----------------------------|
| 1. Twenty minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Helmet and oxygen mask (as required) | “On” | (P),(CP),(N),(CSO),(AG),(E) |

NOTE

When oxygen is not required, the (AG) will don helmets IAW MAJCOM directives at this time. Checklist response is not required

- | | |
|---|-------------------|
| 4. Interphone panel | Set (as required) |
| 5. CDS arming switches | Normal |
| 6. ADS ramp support arms | Connected/engaged |
| 7. Cargo ramp and door control panel | Checked |
| a. Ramp manual selector knob – Neutral | |
| b. Cargo door manual selector lever – Neutral | |
| 8. Jump light intensity | Set (as required) |

- | | | |
|-----------------------------|-------------------|-----------|
| 9. Cargo compartment lights | Set (as required) | |
| 10. Twenty minute checklist | “Complete” | (AG), (E) |

TEN MINUTES

The “CREW TEN MINUTE WARNING” call will initiate this checklist

- | | | |
|--|-------------------------------|-----------------------|
| 1. Ten minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Red lights/NVG airdrop caution lights | Checked on | |
| 4. Cabin altitude check (as required) | “Complete” | (P),(CP),(N),(AG),(E) |
| a. Mask – On and connected | | |
| b. Oxygen regulators – ON | | |
| c. Mask hose connection – Checked | | |
| d. Regulator flow indicator – Checked | | |
| e. Parachutist/ personnel oxygen – Checked | | |
| 5. Restraint harness/parachute | On and adjusted (as required) | |
| 6. Ten minute checklist | “Complete” | |

SIX MINUTES

The “CREW, SIX MINUTE WARNING” will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. Six minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |

SLOWDOWN

The “SLOWDOWN NOW” call will initiate this checklist.

- | | | |
|-----------------------|-------------------|-----------|
| 1. Jumpmaster | Alerted | |
| 2. Ramp and door area | Visually clear | |
| 3. Ramp and door | “Clear to open” | (AG), (P) |
| | “Open and locked” | (AG) |

Check cargo door and ramp fully open, with cargo door locked in the up position and flags visible (when possible).

- | | | |
|--------------------------|------------------------------|-----------|
| 4. Ramp and door control | Assumed by jumpmaster/safety | |
| 5. Slowdown checklist | “Complete” | (AG), (E) |

WARNING

From this point on, if the airdrop is aborted, or a no drop situation occurs, the aerial gunner will acknowledge “NO DROP” and perform the Completion of Drop checklist. If the drop is to be reattempted, the airdrop checklist will be reinitiated beginning with the Twenty Minute checklist.

TWO MINUTES (AS REQUIRED FOR HIGH ALTITUDE AIRDROPS)

The “CREW, TWO MINUTE ADVISORY” call will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. Two minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Jumpers | Positioned | |

ONE-MINUTE

The “CREW, ONE MINUTE WARNING” will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. One minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |

RELEASE POINT

The “TEN SECONDS” call will initiate this checklist.

- | | | |
|----------------------|-----------------------------|------|
| 1. Ten seconds | Noted | |
| 2. Green light | On | |
| 3. Status of jumpers | “Load clear” (or condition) | (AG) |

COMPLETION OF DROP

The “RED LIGHT” call will initiate this checklist.

- | | | |
|--|------------------------|-----------|
| 1. Red lights/NVG airdrop caution lights | Checked on | |
| 2. Jumpmaster/ safety | Notified | |
| 3. Ramp and door | “Closed and locked” | (AG) |
| 4. Cargo compartment lighting | Set (as required) | |
| 5. Parachutes | De-armed (as required) | |
| 6. Drop checklist | “Complete” | (AG), (E) |

Table A2.3. Amplified AG High-Altitude Personnel Airdrop Checklist - Paratroop Door Exit.**TWENTY MINUTES**

The “CREW, TWENTY MINUTE WARNING” call will initiate this checklist.

- | | | |
|---|----------------|-----------------------------|
| 1. Twenty minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Helmet and oxygen mask (as required) | “On” | (P),(CP),(N),(CSO),(AG),(E) |

NOTE

When oxygen is not required, the AG(s) will don helmets IAW MAJCOM directives at this time. Checklist response is not required.

- | | | |
|-----------------------------|--------------------|-----------|
| 4. Interphone panel | Set (as required) | |
| 5. CDS arming switches | Covers down, taped | |
| 6. Jump platform lights | Set, (as required) | |
| 7. Jump intensity lights | Set, (as required) | |
| 8. Cargo compartment lights | Set, (as required) | |
| 9. Twenty minute checklist | “Complete” | (AG), (E) |

TEN MINUTES

The “CREW, TEN MINUTE WARNING” call will initiate this checklist.

- | | | |
|---|-------------------------------|-------------------------------------|
| 1. Ten minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Red lights/NVG airdrop caution lights | Checked, on | |
| 4. Cabin altitude check (as required) | “Complete” | (P), (CP), (N), (CSO),
(AG), (E) |
| a. Mask – On and connected | | |
| b. Oxygen regulators – On | | |
| c. Mask hose connection – Checked | | |
| d. Regulator flow indicator – Checked | | |
| e. Parachutist/personnel oxygen – Checked | | |
| 5. Restraint harness/parachute | On and adjusted (as required) | |
| 6. Ten minute checklist | “Complete” | (AG), (E) |

SIX MINUTES

The “CREW, SIX MINUTE WARNING” call will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. Six minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |

SLOWDOWN

The “SLOWDOWN NOW” call will initiate this checklist.

- | | | |
|------------------------|---------------------|------|
| 1. Jumpmaster | Alerted | |
| 2. Air deflector doors | Checked-open | |
| 3. Paratroop door(s) | “Opened and locked” | (AG) |

NOTE

The aerial gunner(s) is cleared to open the paratroop door(s) upon visually ensuring the air deflector door(s) are opened and upon hearing the PM calling the air deflector doors “open.”

- | | | |
|---------------------------|------------------------------|-----------|
| 4. Jump platform(s) | Locked in place | |
| 5. Paratroop door control | Assumed by jumpmaster/safety | |
| 6. Slowdown checks | “Complete” | (AG), (E) |

WARNING

From this point on, if the airdrop is aborted, or a no drop situation occurs, the aerial gunner will acknowledge “NO DROP” and perform the Completion of Drop Checklist. If the drop is to be reattempted, the airdrop checklist will be reinitiated beginning with the Twenty Minute Checklist.

TWO MINUTES (AS REQUIRED FOR HIGH ALTITUDE AIRDROPS)

The “CREW, TWO MINUTE WARNING” call will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. Two minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |
| 3. Jumpers | Positioned | |

ONE-MINUTE

The “CREW, ONE MINUTE WARNING” call will initiate this checklist.

- | | | |
|-----------------------|----------------|------|
| 1. One minute warning | “Acknowledged” | (AG) |
| 2. Jumpmaster | Alerted | |

RELEASE POINT

The “TEN SECONDS” call will initiate this checklist

- | | | |
|-------------------|-----------------------------|------|
| 1. Ten seconds | Noted | |
| 2. Green light | On | |
| 3. Status of load | “Load clear” (or condition) | (AG) |

COMPLETION OF DROP

The “Red Light” call will initiate this checklist.

- | | | |
|--|----------------------------|-----------|
| 1. Red lights/NVG airdrop caution lights | Checked on | |
| 2. Jumpmaster/safety | Notified | |
| 3. Jumpmaster safety check | Accomplished (as required) | |
| 4. Jump platforms | Folded in | |
| 5. Paratroop doors | “Closed and locked” | (AG) |
| 6. Cargo compartment lighting | Set (as required) | |
| 7. Parachutes | De-armed (as required) | |
| 8. Drop Checks | “Complete” | (AG), (E) |

CLEAN UP**NOTE**

This checklist should be performed as soon as practical. If an immediate landing is planned, the checklist may be delayed until after landing.

- | | |
|----------------------|--------|
| 1. Loose equipment | Stowed |
| 2. Cargo compartment | Secure |

Table A2.4. Amplified High-Altitude Emergency Procedures For Decompression Sickness Or Unusual Pain.

1. Crew notified	Provide a brief description of problem
------------------	--

NOTE

Ensure the affected personnel remain on 100% oxygen until evaluated by a flight surgeon or competent medical authority.

2. Descend and pressurization

NOTE

Descend and/ or pressurization will be determined by the type and degree of the problem.

3. Mission

Abort

NOTE

Proceed to a location where qualified medical assistance is available. Notify the appropriate command and control agencies of the emergency. If required, request medical support meet the airplane upon landing.

4. Keep the crew informed on the condition of the affected personnel.